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EDITORIAL — SOME HIGH LIGHTS

General Economic Science:

State :

Farmers Agitation and Industrial Relations: In relation to the 12 point demand formulated by the Coimbatore District Agriculturalists Association outlined in the last issue of the Bulletin, the situation continued to be disturbed in July. The Government announced on 19th June measures to meet two of the major demands of the Association. First from June, power rates will be charged on a slab system so that farmers using more power in districts like Coimbatore where the water level is lower than the other districts will be compensated. The new rates are: those using 5 h.p. upto 200 units per month at 12 paise per unit and above 200 units 10.8 paise per unit; those using more than 5 h.p. upto 400 units, 12 paise per unit, and above 400 units at 10.8 paise per unit. These revised rates will largely benefit larger farmers as only they can afford deep wells and energising of pumpsets over 5 h.ps. That is being made the reason for continuing the agitation. The Government has been repeatedly advised by its own export committee, the Union Government and the World Bank to raise its electricity rates for the agriculturalists, as a condition for further loan finance for its rural electrification programme. Not only are the rates in this State lower than in the neighbouring States, there is also the problem that with these revised rates, the deficit of the Tamil Nadu Electricity Board at the full 12 paise rate of Rs. 14 crores will be further increased. There is need for this issue of agricultural power rates to be approached in a sober and business-like manner. The other issue relates to agricultural income tax. The compounding facility now available to farmers owning up to 30 standard acres will be extended to all farmers irrespective of the extent of the land held by them. At the July session of the legislature a bill is being passed to give the farmers the option of using the compounding facility or to furnish their full accounts for the purpose of assessment. This measure will meet the problems that farmers face in the maintenance of accurate accounts for the agricultural income tax. The other main demand of the farmers is for a moratorium or the cancelling of loan repayments and arrears. This facility is available when there are hardship cases, such as floods and droughts. The issues are specific and the basis for agreed solutions exist. Given the importance of ensuring continued and expanded agricultural production in the State, the issues should be settled without involvement in questions of administrative protocol or prestige factors. This agitation and debate could also be an occasion for preparing for the larger issues being considered by the Raj Committee and the fair resource contribution of the agro-rural sector to State and national development. On the industrial relations front, where May and June witnessed some deterioration in the Simpson group and Ashok Leyland in strikes and violence, two positive developments will promote industrial peace in the State. First leaders of the major trade unions of the Neyveli Lignite Corporation have decided to have a single Employees Union at the Neyveli complex. The unions thus amalgamating are the NLC Workers' Progressive Union, the NLC Staff Union, the NLC Employees Union, the National Mine Workers Union

(INTUC), the United Workers Union (AITUC) and the Lignite Mines Labour Union (CITU). This was an important and practical conclusion reached at the leadership and organisation course arranged by the Corporation. A follow up action committee headed by Mr. Durai Kadiresan will implement this decision. The other development is the five point programme for industrial peace established by industrialists and representatives of industrial associations in the State. The main thrust of the plan is the emphasis on the responsibility of employers for cooperating with Government and trade unions in speedily restoring industrial peace. The plan reaffirms the commitment of employers and managements to the efficient management of the enterprise in the interest of all participants, the continual improvement of living standards of the workers and freedom of association, free collective bargaining and the right to strike and lockouts. Against this frame, the plan calls for respecting the sanctity of existing agreements, the maintenance of discipline in accordance with the established rules and regulations, including use of grievance machinery as appropriate, government aid in preventing intimidation and violence, the non-use of go slow, illegal strikes, sit ins etc., and a certain degree of uniformity in the terms of employment in a given area. The programme that has been accepted by the employers is not new or innovative at any point. It is, however, an agreed programme and could be the basis for an agreement with the trade unions and with the Government to ensure the kind of industrial relations infrastructure that the State's industrial growth needs.

Communication: The State's programme for the development of road, rail and air services is moving forward. The Rs. 19 crores 5 year rural road plan involves the provision of well developed roads infrastructure by linking all habitations with a population of 1,500 persons and above. This calls for the building of 281 k.m. of all weather link roads connecting 200 habitations with the main roads and improving 4280 k.m. of cutcha roads. The first phase of this plan has now been approved for building the 281 k.m. all weather link roads and improving 1427 k.m. cutcha roads at a cost of Rs. 6 crores, half of which will be completed in 1972-73 with a provision of Rs. 3 crores this year. This programme will, by increasing mobility push forward the rural economy of the State and generate employment. It will employ 15,000 unskilled workers and 500 skilled persons. It is being financed by the 10 percent surcharge on motor vehicles effective from April, 1972 and the rural road development fund which will be constituted from its proceeds will be matched by a grant from the employment programme fund of the Union Government. Road transport is further augmented by the inter-State agreement with Mysore which covers public carriers, taxis and other vehicles over 13 inter-State routes. This issue concerning 23 such routes has been hanging fire for over 6 years and the agreement now opens up new perspectives of trade and transportation between the two States. Under the agreement Tamil Nadu will operate 1206 k.m. in Mysore covering such routes as Tiruvannamalai, Madurai to Bangalore, Salem, Coimbatore to Mysore etc. and Mysore will operate over 1146 k.m. in Tamil Nadu covering Bangalore to Hosur, Mysore to Bennair and Morappur etc. There will be a single point motor vehicles tax for all stage carriages in place of the current double point MV tax. A joint transport committee has been set up to study and facilitate route utilisation, passenger loads and the running of services on the inter-State routes. The 1970 report of the Transport Research Station shows the need for improvement in road safety measures in the State referred to in Vol II No. 6 of the Bulletin. Tamil Nadu had the largest number of deaths in motor vehicles accidents (1729 persons) and the largest number of vehicles involved in avoidable

accidents (295). The railway extension and improvement programme for the State referred to in Vol. II No. 4 of the Bulletin, comprises (a) a line connecting Trivandrum-Nagercoil-Kanyakumari and Tirunelveli, (b) electrification of the Madras-Arkonam line, (c) a new broadgauge line connecting Salem-Karur, (d) conversion of the Dindigul-Madurai-Tuticorin line into broadgauge with a short link from Maniyachi to Tirunelveli and (e) construction of overbridges starting with one at Manali. This part of the State's Communication is not progressing satisfactorily. In fact the State's railway infrastructure is becoming a bottleneck to its development. Survey work has started only on the first project - the railway line connecting Trivandrum-Nagercoil-Kanyakumari and Tirunelveli. On all other projects there are the usual studies and delays and it is not till supplementary railway budget is announced that the decisions on the urgent components of the programme will be known. Even worse is the continued shortage in supply of wagons to the Southern Railway, to which attention was called in the last issue of the Bulletin. As against the normal turn around of 8000 wagons for moving essential food grains and industrial raw materials in the State, there is a shortage of 8000 wagons. This severely affects the cement and fertiliser firms who are left with stocks which cannot be marketed or can be marketed at much higher cost or at great risk by conveyance in open wagons. The disruption to the industrial and commercial activities in the State is compounded by the fact that the railway authorities had built up a large demand to move their finished products speedily at normal costs. There is a short supply of wagons and diesel all over the country due to poor planning and not reckoning with the continuous improvement of the agricultural sectors performance and the needs of Bangla Desh. The latter of course could not be foreseen but the former has been long planned. The resulting wagon shortage should now be equitably shared between the different regions and States and a systems approach should be adopted to avoid this artificial and unnecessary obstacle to the progress of the State and Country. The air services in the State and inter-State linkages will be improved with the execution of the Rs. 5½ lakh scheme for redesigning and enlarging the Meenambakkam airport. Its ancillary garage and parking facilities will make for more effective use of the services.

Power and Water : The precarious power situation of the State outlined in the last issues of the Bulletin, became a present problem with the Government decision to impose a 25 percent power cut in the case of all H. T. supplies from 6 a.m. on June 19. Street lighting was reduced, neon and festival illuminations discontinued and all consumers requested to cooperate in economising on power consumption. This power cut which is serious for industrial output and commercial activities was caused by (a) the low storage position in the hydel reservoir of the State, (b) the stopping of power supply from Kerala and (c) the needs of defence and essential industries. The storage position in the State continued to be poor through June. Kerala had been giving Tamil Nadu 36 lakh units per day till May when it reduced it to 25 lakh units, and later to 10 and 15 lakh units, till it was completely stopped on June 15. This stoppage of power from Kerala was due to the delay in the onset of the south west monsoon and with no rains in its catchment areas, the storage in its reservoirs was running low. The result of all these is that Tamil Nadu is short of 2.5 million units of power daily. In this context the expansion of the Ennore power station and the stepping up of power generation at Neyveli become the first priority. The third unit of the Ennore plant with a capacity of 110 MW went into production in July. The fourth unit with a similar 110 MW capacity will be commissioned by the year end. A fifth generating 110 MW unit has now been approved and should go

into production by March, 1974. Neyveli is also improving its generation to 300 million units. The long range power plan outlined in Vol. II No. 6 of the Bulletin must also be pursued. The financing of some of these projects now becomes the responsibility of the Tamil Nadu State Electricity Board, with the separation of its finances and accounts from that of the Government as from 1st April. The heavy deficits incurred by the Board has been a major element in the large overdraft situation of the State. Now the Board is making every effort to mobilise resources and become financially viable. It raises rural debentures and open market loans (Rs. 7 crores and Rs. 4.4 crores last year and an open market loan of Rs. 3.6 crores planned for this year), it operates accounts directly with commercial banks (Rs. 4.5 crores till now and Rs. 4 to 5 crores for the current year); it receives resources from the Rural Electrification Corporation (Rs. 4 crores in the last two years and Rs. 2 crores for this year); it is negotiating with the Agricultural Finance Corporation and IDBI for some relaxation in their ceilings and criteria on loan finance and it is acting for the farmers in repaying pumpsets loan to the State land mortgage bank. The Board's resource mobilisation will be further helped by a World Bank loan of Rs. 6 crores. This important resource raising programme will have to be accompanied by a concerted effort to reduce line losses suffered by the Board and through tariff increases. The combined advice of both the Union Government and the World Bank for such increase in rates—which is also being made a condition for their loan assistance—is facing the problem of reducing the rates which is the centre piece of the Coimbatore Agriculturalists demand. The Board has also negotiated a fresh agreement with the Government of Kerala for the supply of a minimum 100 million units.

Further to the agreement of the Chief Ministers of Tamil Nadu, Mysore and Kerala on the Cauvery waters reported in the last issue of the Bulletin, the data collecting four member panel headed by Mr. P. R. Ahuja, Joint-Secretary, Union Ministry of Power and Irrigation is at work collecting data on the Cauvery waters, its utilisation at different points of time and irrigation practices, existing and proposed projects and those under construction. The panel is also collecting information on the adequacy of present supplies or excessive use of water for irrigation purposes, the physical and other features of the cultivated areas, existing and proposed uses for domestic and industrial water supply, hydro-electric power generation, salinity etc. The panel will submit its report and recommendations to the Government by September 15.

Housing and Consumer Protection : The Madras Metropolitan area covers less than one percent of the total area of the State but 25 percent of the State's urban population line in it. To relieve this congestion, three satellite towns are being developed—Gummidipundi, Thiruvallur and Sengundrum. Another effect of the growth of the Madras city population is the phenomenal increase in the number of slums. Even as the existing slums are replaced by tenements built under the very effective programme of the Slum Clearance Board new ones keep spreading. 800 tenements are now ready for occupation and by the end of this year 1848 will have been built at a cost of Rs. 140 lakhs. The slums in Kotturpuram, Suryanagar and Gariappa Road have been removed and a huge residential complex has been erected in Kotturpuram by the Slum Clearance Board. Each tenement apartment has electricity and a living room, a kitchen and a bath room and lavatory at a monthly rental of Rs. 15. About 250 tenements are available under a hire purchase system to Government employees, Corporation staff, transport workers and temple priests earning below Rs. 250 per month. A voluntary health service centre (costing Rs. 1.56 lakhs)

a children's park, community and shopping centres and library are provided in the complex. The Union Panel on National Housing Policy should help remove the present shortages and still facing the housing programme in this and other States. The third leprosy beggar rehabilitation home in this State has been opened at Barugur as part of the 10 homes to be set up. This programme is financed by the Voluntary Beggar Relief Fund which stands today at Rs. 108 lakhs. For both the slum clearance and beggar rehabilitation programme, a broad education programme must be undertaken by the local bodies and voluntary agencies to help in the realisation of the objectives of the programmes which involve not turning the tenements into slums and enabling the beggars to regain their rights as responsible citizens.

The regulatory price mechanism of classical economics, the Pareto concept of ophelemity, the preferred position, the hill of pleasure and other assumptions of welfare economics are called in question in the State and the Country with the phenomenon of spiralling prices which is not demand based, high pressure salesmanship and misleading advertisements followed by little or no after sales services and adulterated and sub-standard consumer goods. The silver jubilee celebrations of the Indian Standards Institution referred to in Vol. II No. 6 of the Bulletin was the occasion for a seminar in the State on Consumer Protection and guidance against the above background and the role of quality control and certification of marketing. The major conclusion emerging from the seminar is that the consumer is not the decisive element, his marginal utility has no real play, and given the lack of education and poverty pressure of the average consumer, there is need for an organised consumer movement in the State that can educate the consumer and make the producer quality conscious.

National

Fifth Plan : The Centre-States financing of the Fifth Plan is to be subject of study, discussion and recommendation by the five member Sixth Finance Commission headed by Mr. K. Brahmananda Reddi. There are important innovations in the commission set up. The Union Planning Commission is now a member of the Finance Commission, so that the artificial, distorting and rigid separation between Plan expenditures for which the Planning Commission was supposed to be responsible and non-plan expenditure which had been the exclusive concern of past Finance Commissions will not govern the Fifth Plan financial arrangements. The Commission has been asked to make an assessment of the non-Plan capital gap of the States on a uniform and comparable basis for the period of the Fifth Plan. It will also review the policy and financial arrangements of the State's relief expenditures caused by natural calamities. It will examine the feasibility of establishing a national fund to which both the States and the Centre can contribute a percentage of their revenue receipts. It will recommend the distribution of the net proceeds of Central income and excise taxes, estate duty and the additional excise on cotton, sugar etc. in lieu of sales taxes, the principles for making grants-in-aid to the States from the consolidated fund and the basis of allocation of wealth tax on agricultural property. In light of the Plans recommended by the Union Planning Commission and the rise of salaries of Government employees, teachers etc., it will determine the grants-in-aid to the States under article 275 of the Constitution. The Commission is to submit its report by October, 1973. Thus the terms of reference of the Sixth Finance Commission are a step in the direction of improving the system of sharing the country's revenues between the

Centre and the States that has been repeatedly emphasised in the Bulletin. The three worrisome heritages are : the lack of correspondence between the development obligations of the States and their rightful financial resources. Second the methodology of sharing the national resources has introduced an element of arbitrary adhocism and a client-patron relationship which is damaging to the Country and its progress. As a result of increasing Central loans and grants-in-aid, the divisible pool of taxes adds up only to two-fifths of the non-plan funds received from the Centre by the States. The remaining three fifths is distributed at the Centre's discretion. The third problem is the growing debt burden of the States which also has inflationary repercussions. This burden is now so large that the interest payments by the States to the Centre amounts five eighths of what they receive from the divisible tax pool. This is met by additional loans by the Centre to the States, but this simply increases the total indebtedness of the States. And so the Sixth Finance Commission is equipped to help in the development of a new and more viable basis of sharing the nation's revenue resources between the Centre and the States, addressing itself particularly to the three problems referred to, through proposing a scheme for sharing the balance of the non-plan revenues ear marked for the States, writing off the major part of the accumulated debt and softening the terms for the balance and proposing principles for inter-State sharing of revenue which will harmonise the rightful claims of backward States and districts with encouraging enterprise and resource mobilisation. There is also need for a similar examination of the capital resources of the Country and their use—taxes pending to this study of the revenue resources.

Two other developments which will influence resource mobilisation for the Fifth Plan are the continuing consultation of the Union Finance Ministry on the Wanchoo Committee recommendations (See Vol.II No. 5 of the Bulletin). The major recommendation to reduce the marginal rate of income tax from 97.75 percent to 75 percent was rejected at a meeting of economists organised by the ministry on the grounds that such a reduction would not stop evasion and would be against the Fifth Plan social objectives. The discussion in the Lokh Sabha Consultative Committee on finance is also on similar lines. The ministry thinking is thus against the basic recommendation of the Wanchoo Committee—a recommendation which is set in a broad frame to discourage black money and evasion, encourage hard work and mobilise further resources. On this matter therefore we are back to the pre-Wanchoo Committee times. Another resource mobilising decision of the setting up of public sector panel to define the national objectives of the public sector and to set forth the financial and economic obligation of each individual public enterprise. Such a statement would establish for each unit its objectives, its obligations including reasonable returns on investment. The results of the work of the panel would be many. It would make the public sector contribute once more its normal share to the savings and investment targets of the Fifth Plan. Each unit will know what rate of return it must work for, after allowing the pricing problem and the social objectives of the Government. It will make possible self financing of expansion and modernisation programmes including use of management by objectives techniques.

National Production Front: The Central Statistical Organisation June report shows that the 1971 industrial production growth averaged 3.1 percent while that for 1970 was 4.6 percent. Thus the industrial down trend of 1970 was not arrested but worsened in 1971. This also means that the overall industrial growth rate of 3.5 to 4 percent for last year, 1971-72, forecast in the Economic Survey was on the optimistic side. The actual

rate is likely to be 3 percent. In fact in the first 10 months of the year the rate was 2.6 percent. It was the war effort which led a special spurt in December and January, the index rising to 201.8 in December and falling to 198 1 in January, which was even so 5.1 percent higher than 1970 January index. The industrial stagnation during the year was due to production decrease in steel, transport equipment, non-electrical machinery and cotton textiles. The decline in steel production referred to in the last issue of the Bulletin is related to the limited availability of coal resulting from the railway wagon shortage and mess 14 States have registered complaints about the inability of the railways to make available wagons for transporting coal to the industries in their areas. The result was that coal production had to be decreased from 71 million tonnes in 1970-71 to 69 million tonnes in 1971-72. Against a monthly production last year of 6.20 million tonnes, only 5.70 million tonnes were transported and pit head stocks were higher than production at 8.16 million tonnes. The annual reports from IISCO, HEL and MAMC continue to be discouraging. IISCO with a million tonne ingot capacity, produced 33,000 tonnes in May and faces a serious possibility of closure. The 25,000 workers employed in it and 15,000 in allied iron ore mines and coal washeries face unemployment. The heavy losses of Rs. 36 crores suffered by Heavy Electricals has led the Government to ear-mark out of existing loans an amount equal to its cash losses as interest free loans for three years from April 1, 1972 and a moratorium on loan repayment for three years. The Mining and Allied Machinery Corporation whose cumulative losses up to 1970-71 amount Rs. 33.01 crores will have an additional loss of Rs. 3.41 crores for 1971-72 mainly due to wrong planning. It was equipped to manufacture machinery for the coal mines to meet an annual production requirements of 200 million tonnes from the mines which are producing only 90 million tonnes per annum. The Corporation is therefore diversifying its programme, producing conveyors, stackers, reclaimers and ship loaders for the Madras and Marmugao Port trusts for Rs. 7 crores, for Haldia and Vishakapatnam Post trusts for Rs. 27 crores. With the nationalisation of coal mines, new orders for coking coal mines machinery will be ordered from it. Its capital structure is also being reorganised to provide relief in interest and repayment obligations. The partial control of sugar is from July 1 regulated by statute under which 60 percent of the monthly releases of sugar is distributed as levy sugar at prices ranging from Rs. 122 82 per quintal in Andhra Pradesh to Rs. 183.77 in Madhya Pradesh. The impact of the new prices will be to make available levy sugar at less than the present controlled rates, Sugar producers in Maharashtra, Uttar Pradesh and Bihar have protested at the new statutory lower prices in view of their higher costs, the lower recovery rates and increased cane prices to encourage cane production in accordance with the recommendations of the Agricultural Prices Commission. The imperative is to increase sugar and cane production. The current gap between licensed and installed capacity of 1.4 million tonnes in sugar mills must be closed. The total sugar requirements by the end of the Fifth Plan will be 6 million tonnes (plus 9.6 million tonnes of gur and khandasari). For this sugar cane production should reach 177 million tonnes by the end of the Fifth Plan. To achieve these targets the sugar industry will have to pay higher prices to cane growers and also promote expansion of sugar best cultivation. The yield per acre and recovery rate for sugar beet is 30 to 50 tonnes and 12-13 percent while that for cane is 19 tonnes and 9.8 percent. The Government should review its sugar price policy using the price linking formula for sugarcane based on the prices of sugar. Jute production for this year will be declining to 55 lakh bales due to the severe drought in the main jute growing areas of West Bengal against a mill capacity of 75 lakh bales. Bangla Desh may meet part of this shortfall.

There is need to review the guide lines issued by the Banking Department for the development of the joint sector. The programme is needed and could combine the strong points of the private and public sector. The convertibility clauses and the financial ceiling must be examined in light of experience todate in order that the joint sector can become an effective means of promoting industrial growth, particularly in the medium sector. The Dandekar committee report on automation is a cautious first step. It recommends computerisation of data processing in public sector industrial establishment on the basis of a programme of education and participation by the work force. In the present employment situation of the country, this limited use of computors is sound. Apart from its untrammelled use in scientific research, computerisation will develop naturally and speedily. It is essential to prepare the trade unions and workers for this development and secure their prior understanding and agreement. Petroleum products are being expanded in the Country to compensate for the reduction of the foreign oil companies products consequent on the price restraints on their crude oil imports. Cochin Refineries is increasing its capacity by 1 million tonnes to 3.5 million tonnes, Barauni by 1.2 million tonnes to 3.4 million tonnes, Koyali by 1.75 million tonnes and Haldia which will start next year, increasing total production by 4-5 million tonnes. With the increased production of tubes and tyres and other industrial rubber products, the supply position of rubber—both natural and synthetic—will need to be revised. Vol. I Nos. 6 and 9 of the Bulletin analysed the conditions of glut in rubber supply. Now with the rubber demand increasing to 1.30 lakh tonnes in 1970 and to 1.50 lakh tonnes this year, the State Trading Corporation can unload its buffer stocks and import what is needed to cover the deficit - (the supply is as around 1.40 lakh tonnes). The scheme for increased rubber production include (a) subsidising programme at the rate of Rs. 2,471 per hectare, (b) new planting loans to small growers at Rs. 3,459 per hectare, (c) loans for improvements at Rs. 2,224 per hectare and (d) distribution of fertilisers, fungicides and high yielding plants. The radio industry is facing demand for radio sets, primarily because of miscalculation in the rural demand for transistors. Againt the production target of 7 million sets by the end of the Fourth Plan, present output is around 2.8 million sets. Given the price stability and the self sufficiency in raw materials and components achieved by this industry, it is necessary for AIR programmes to be redesigned to meet the farmers' need for information and entertainment and so to review and expand the rural demand for sets.

STC and Exports : The June meeting of the State Trading Corporation in Madras recorded the heartening development that the Corporation has wiped out its overdraft of Rs. 18 crores, has accumulated a surplus of Rs. 10 crores, is looking for new avenues of export investment and is planning to float part of its capital to employees and small share holders. In the last four years its exports have increased four fold and for this year it has already secured export orders of Rs. 107 crores against a target of Rs. 128 crores. It is planning to open warehouses in West Asia, charter vessels to export Rs. 4.6 crores of cement to the Persian Gulf and meet the Soviet demand for 10,000 tonnes of mango juice and range products valued at Rs. 1.25 crores. Its subsidiary, Projects and Equipments Limited will be exporting Rs. 2 crores of automotive parts and Rs. 10 crores of heavy engines. The Corporation has offered Rs. 10 lakhs of equity capital participation to the Tamil Nadu Small Industries Development Corporation as one means of decentralising its corporate activities. Its pricing policy and bulk purchase and sales procedures are to be examined by management experts as a means of ensuring that the optimum use is being made of its monopoly powers. This is a good base for the current year's export

target of Rs. 1,760 crores, that has been fixed by the Foreign Trade Ministry representing an 8.6 percent increase over last year's. With the import of some of the scarce raw materials needed, the Steel Bank of HSL and industrial raw materials aid of STC, imports priority to export oriented industries, the current year's target will be reached. Within their overall target, the engineering goods import target is Rs. 200 crores for the current year, which is 0.08 percent of the 1970 world exports of engineering goods of Rs. 81,000 crores. The industry must increase its percentage of production devoted to exports now amounting to under 4 percent. The markets are expanding and the orders should be speedily and effectively executed. Another expanding export product is our readymade garments which are increasingly popular in the U.S.; Soviet Union, Nigeria, West Germany, France, Canada, etc. Last year registered a 15 percent increase in the export demand for cardigans and sweaters, outer garments, cotton trousers, shirts etc. There was also considerable increase in the exports of foot-wear to over 50 countries and rubber manufactures particularly automobile tyres and tubes. Another expanding area is Australia where recent discussions have lead to the proposal by the Australian Wool Commission to set up industries in India for processing of its gray wool, the production of wool tops, yarn, fabric and knit wear for reexport to Australia.

Water Resources Council : Several issues appearing simultaneously are bringing to the fore the need for the Country and the State. The prolonged heat spell and the delay in the onset of the monsoons has had serious effects on agricultural production and power supply. The serious supply situation in jute, the delay in resuming irrigation discharges in Tamil Nadu and the effect on kharif sowings in this State and other States are some immediate issues. In the longer pull, food production will have to increase by 50 percent by an additional 55 million tonnes by 1981 to feed the 650 million people of the Country at the world standard of a quarter of a tonne per head per annum. Of this additional 55 million tonnes, 25 million tonnes could be produced by improved agricultural technology and 30 million tonnes by bringing 12 million dry hectares under irrigation. There is also the uneven distribution of irrigation facilities. The most advanced are Punjab with 58 percent of its cultivated land under irrigation followed by Tamil Nadu with 43 percent, and five States, Andhra Pradesh, Haryana, West Bengal, Bihar and Uttar Pradesh which are in 24 to 32 percent range ; five others, Maharashtra, Madhya Pradesh, Mysore, Gujarat and Rajasthan are in the very low 6 to 12 percent range. But the irrigational imbalance is not only inter-State, it is equally an inter-district and inter-block problem within each State, including the first group of States as between Coimbatore, Dharmapuri, Kanyakumari in Tamil Nadu. (See main article in the last issue of the Bulletin). Another expression of the water imbalance is that the Brahmaputra and the Ganga represent two thirds of the water resources of the entire country. Along with these imbalances and scarcities, we also face large scale damage by and wastage of our water resources. Last year the flood damage in the Ganga basin and Orissa amounted to Rs. 580 crores out of the total Rs. 625 crores suffered by the Country. Again water logging and seepage problems have affected six million hectares, the reclamation cost of which is Rs. 1,200 crores and that water if saved could irrigate an additional 6 million hectares. The present ten water and soil management projects need to be extended and Rs. 2,000 crores should be invested on soil conservation works in water shed reservoirs to save them from siltation. The other major problem is power. All the States including Maharashtra, Tamil Nadu, Gujarat and West Bengal, the industrially advanced States as well as the others Andhra Pradesh, Mysore, Kerala, Uttar Pradesh etc. have had power cuts of varying intensity this summer. The

power perspectives are equally challenging. Tamil Nadu's future power needs have been analysed in the last three issues of the Bulletin. For the Country, the demand for power is increasing at the rate of 12 percent per annum. The current power generation capacity which is 17.2 million KW will be increased to 23 million KW by the end of the Fourth Plan, leaving a short fall of 5.8 million KW. The target for the end of the Fifth Plan is 32 million KW. In this area our problems include the annual decline in the water storage of the Hydel reservoirs, (as well as problems of wagon supply for coal deliveries for the Thermal Stations), the timely delivery of generating units and auxiliary equipment by the producing firms as well as all the problems connected with transmission, voltage etc. It is against this background that the proposal for a National Water Resources Council to formulate and implement a national water policy under entry 56 of list I of the seventh schedule of the constitution is proposed. The Council will be responsible for (a) the conservation, control, utilisation and development of the country's water resources, (b) establishing preferences and priorities for water use, (c) preventing pollution and protecting the quality of water, (d) long range plans for water development to support the plans for economic and social development, (e) the coordination and collection of hydrological data and the promotion of research, (f) developing criteria for evaluation, comparison and justification of projects. The Council proposal should be strengthened in two directions. It should have State Councils on Water resources established by State legislation which should be its base of work, planning and coordination. Second it should also be authorised to settle inter-State water disputes, 60 of which are currently holding up water and power development, provided engineering and hydrological experts are used by the Council, as recommended in Vol. II No. 3 of the Bulletin The Ganga-Cauvery project whose engineering feasibility is under study will be part of the terms of reference of the Council which can phase the project, starting with regional linking of the northern, central and southern rivers as suggested in Vol II No. 3 of the Bulletin. On the power front, there is a similar proposal to set up a central organisation to deal with the supply of power to power starved areas, to develop an all India power grid, to train an all India cadre of technicians and engineers and to establish a uniform power tariff for the entire country. This project should be further studied at all levels and a start made with vesting zonal power councils with the responsibilities contemplated for the national council. Regional power grids and transmission lines will provide a realistic base for the development of a national grid and national transmission lines and some international lines such as the power exchange of 100 to 150 MW between India and Sri Lanka.

Land Ceiling and Reform : Tamil Nadu and the Union Government have received reports from their respective panels on the complex issue of urban property ceilings. The Tamil Nadu report is under study by the Government and its recommendations are not as yet officially available. The Union Government panel has recommended a property ceiling in urban areas of Rs. 5 lakhs for a family of five members plus Rs. 25,000 per additional member upto a total limit of Rs. 6 lakhs. Legal entities like public sector firms, LIC, Cooperatives etc. should be classed as non-family group for ceiling purposes. No transfers or purchases by families after the ceiling date should be permitted. Bihar has passed a bill fixing as from September 9, 1970 a ceiling of 2 lakhs for a family of five, with each additional member being entitled to 1/10 of the property upto a maximum of Rs 3 lakhs. Andhra Pradesh has by a June ordinance prohibited alienation of vacant lands in urban areas. There is general agreement among all States and at the Centre on the objectives of urban ceilings. They are to use the surplus urban lands to serve the

common good particularly housing for the weaker sections of our people and public sector projects, to stop speculation in urban land for which the demand is rapidly growing and to use the unearned resources from such land for national and State development. The national discussions and studies under way are to translate these objectives into practical operational programmes and legislation. A consensus is arising on one major issue—that of socialising all urbanisable land in each State. (This was the contribution of the May Ootacamund Housing Seminar—see Vol. II No. 7 of the Bulletin). In agrarian reform, Mysore by legislation is conferring ownership rights on tenants cultivating 3.69 lakh acres belonging to some 35,000 religious and charitable institutions. The institutions will be given as compensation a total annuity of Rs. 16.69 lakhs. The Government will collect an upset price of Rs. 35 an acre from each tenant, giving it a total collection of Rs. 127 lakhs. This tenancy reform is rather important because of the three point agrarian reform—tenancy rights, ceiling and land distribution changes—during the four Plan periods, tenancy reform has been the least satisfactory. Only in abolishing intermediate tenancies has progress been made in all States, though leasing and sub-leasing by tenants have gained ground. The most pressing issues for tenancy reform in all States including Tamil Nadu are the abolishing of crop sharing and sub-leasing, the fixing of fair rents and conferment of ownership rights on tenants. The current unfair crop sharing system is not only socially unjust but is an obstacle to use of improved agricultural practices and technology. It should be replaced and leasing and sub-leasing stopped. Fair rents have been defined in our Plan documents as 20 or 25 percent of gross produce and Tamil Nadu is one of four States which must legislate and implement this provision. Finally ownership rights must be conferred on operating tenants in non resumable lands and in others secure permanent rights in the land they cultivate. Here again Tamil Nadu is one of seven States which must review its tenancy legislation to provide fully for this essential component of agrarian well being and progress. The Madras Institute of Development Studies has currently under study this aspect of the State Agrarian Reform Structure with a view to proposing to the Government the major lines of further future advance.

Employment Perspectives and Problems: In the employment field, the problem is the gap between plans and execution at a time when due to the growth of the population and the increasing numbers entering the labour force every week and the stagnation in industrial growth, the number of unemployed and educated unemployed is growing apace. The CSIR study of the 1971 census referred to later reveals a disquieting educated unemployment situation. The general unemployment situation has not yet been computed but the backlog is mounting. In this situation the continuing gap between employment plans and actual employment of the unemployed must be the first line action. The facts are known. Out of the Fourth Plan provision of Rs. 374.38 crores, only Rs. 65.34 crores have been spent so far. Of the Rs. 73 crores rural employment project started in 1970-71, only Rs. 16 crores have been expanded for providing employment. Out of Rs. 67.5 crores allocated to 46 SFDAs, Rs. 4.17 crores have been released and Rs. 1.69 crores spent. Under the 41 MFAL schemes, 41 projects for Rs. 47.5 crores have been approved, Rs. 3.74 crores released and Rs. 46.28 lakhs spent. Under the dry farming scheme 24 projects for Rs. 20 crores were provided and Rs. 52.76 lakhs spent. Under the Rs. 150 crores three year crash employment scheme, Rs. 46.51 crores were sanctioned in the first year by the end of January, and the amount spent is being computed. And so on. Now all these schemes have been woven together in the significant employment guarantee seheme devised by the Maharashtra Government. Its programme for this year 1972-73 of

Rs. 116.33 crores has been put forward to employ 43 lakh men and women including 4000 educated unemployed and for the last year of the Plan 1973-74—Rs. 145 crores employing 50 lakh men and women. In addition expansion of elementary education is proposed for Rs. 50-60 crores this year and Rs. 100-125 crores next year employing 3 lakh and 6 lakh teachers each year. These planned programmes include (a) the employment guarantee scheme costing Rs. 50 crores and employing 6 lakh persons this year and Rs. 75 crores employing 9 lakh persons next year; (b) extension of SFDAs and MFALs to the remaining 132 backward districts out of the 225 so far identified, which will cost Rs. 40 crores this year and Rs. 50 crores next year, benefiting 33 lakh small and marginal farmers and agricultural labourers and 2,300 project staff; (c) matching State schemes finances for 1.6 lakh persons costing Rs. 15 to 20 crores per annum; (d) rural water supply schemes for 14,000 villages at a cost of Rs. 43 lakhs this year and employing 1,000 engineers and other educated staff; (e) Rs. 90 lakhs proposed for surveys, investigations and project preparations to have ready a shelf of transportation projects for the Fifth Plan at a cost this year of Rs. 90 lakhs and employing around 1,000 skilled and unskilled workers; and (f) the elementary education expansion plan. These plans and programmes and the rate of execution over the last two years now show that it is not resources that are lacking but sound technical preparations and that outworn and irrelevant procedures are further bottleneck. The Maharashtra scheme of employment guarantee makes a fresh approach and if extended to all States might represent one important break through. From May 1 when the scheme was launched, a State Committee consisting of the Chief Minister and a Committee in each district and each panchayat was established to run the programme. The scheme is for over 18 years old, unskilled workers who could not obtain employment in agriculture and related occupations in scarcity, relief or crash employment programmes. The projects are all productive, consisting of construction of percolation tanks, soil conservation, construction and repairs of roads and canals, with no choices of the work offered. The wages paid are slightly lower than that for regular agricultural labour in order to prevent diversion of labour into the guarantee scheme. The novelty of the scheme is that the guarantee of employment is given at the district level and the daily work provided at the Panchayat Samiti and village level. This scheme has two important lessons which if applied to all States and to the Union Government's procedures will make the employment programme come alive and close the tragic gap between planning and execution. First for every State and the Country, employment generation is through small rural development projects which, however, must be as carefully prepared and designed down to the work to be undertaken, the time schedule, the means of payment etc. as is done for large and medium undertakings. Salem Steel, Arkonam Concast, Neyveli are not the means of solving our mass unemployment problem. They are infrastructural and input facilities that the State needs. Detailed project preparation of employment oriented programmes for the Fifth Plan must now be undertaken. The second lesson is that approval procedures must be changed to allow sanction of projects at the State level, the release of funds at the district level, and all other decisions at the Union Panchayat and village panchayat level. Employment generation and centralised decision making cannot and do not go together.

Population Trends: The final 1971 census tabulation released on June 20 records the following demographic trends for the Country, the States, the communities and the cities as of 1 April, 1971. (a) The total population was 547,949,809 and not 546,955,945 as reported in the provisional figures in Vol. 1 No. 5 of the Bulletin. While the addition

of 993,864 to the provisional total is not in relative terms alarming, the general growth rate of 24.80 percent for the sixties against 21.50 percent for the fifties is disquieting. Until the age distribution of the population becomes available (later in the year), the significance of this trend for our family planning programme cannot be assessed. But that must be done in view of the stakes. The most conservative projections show that we will be over 900 million persons by the end of the century with extremely serious consequences for planning at the Union and State levels, (b) within this worrisome overall growth rate, the performance of the various communities is equally disturbing. The Christians who form 2.60 percent of the country, with 60 percent of them in the three Southern States of Kerala, Tamil Nadu and Andhra Pradesh have registered the highest 32.60 percent growth rate in the country, particularly in Tamil Nadu and Andhra Pradesh. The proportion of Christians to total State population is 31.6 percent in Kerala, 16.55 percent in Tamil Nadu and 12.82 in Andhra Pradesh. The Sikhs who form 1.89 percent of the population have registered the second highest growth rate of 32.28 percent. The Muslims who constitute 11.21 percent of the population have the third highest growth rate of 30.85. It is in three Southern States (Mysore, Tamil Nadu and Kerala) and Assam where they form a relative small minority, that the highest growth rates are recorded. Hindus who form 82.72 percent of the population had growth rate of 23.69 percent which is below the All India average of 24.80 percent. Again we must await the age distribution figures to be released later by the census commissioner before drawing conclusions with regard to family planning programmes for these communities. The attribution of the high growth rates among the three minority communities Christians, Sikhs and Muslims to socio-cultural traits such as remarriages, lesser abstention etc. is no explanation. They are factors that must be taken into account in fashioning the population control programme to which all of us in the country are committed. Here our secular society will and must apply the small family norm to the individual family—Hindu, Christian, Muslim or Sikh—so that each family can plan its improved well being. Equally the society must develop its population policy for the country so that we stop adding 14 million mouths every year at a time of massive unemployment and a huge poverty sector covering 50 percent of our people. The family planning target of 25 births per thousand for Tamil Nadu by 1977 must be achieved by every community—Hindu, Muslim and Christian and must lead on to a further target of 15 per thousand by the end of the Sixth Plan so that we can attain a zero rate of overall growth. On the basis of further detailed information from the census to be made available, the scheme of incentives for the small family and disincentives for the large family unit have to be designed and redesigned in the family planning programmes of each State. (c) The rural population is 438,855,500 and the urban 109,094,309. The final figures also introduce a new concept of urban agglomerations, going beyond municipal limits to contiguous urban areas. Nine such areas have a population of over 1 million, ranging from Calcutta with 7,031,382 to Poona 1,135,034. Madras is the fourth largest with 3,169,930 people, coming after Calcutta, Bombay and Delhi. This again has implications for our planning process in regard to urban housing, industrial policy, food and milk supply, dispersal of industries and control of the urban environment. (d) The scheduled castes and tribes form nearly one fifth of the country's population. Madhya Pradesh, Orissa, Bihar and Rajasthan have 60 percent of the country's tribal population. Tamil Nadu has 3,11,515 tribal people. This population sector will require special attention in the Fifth Plan. It is part of the poverty sector in the country with special socio-cultural traits that need attention. The

Madras Institute of Development Studies is assisting the State and the Union Government in preparing an economic profile and programme for the scheduled castes and an educational plan for the scheduled castes/tribes in this State as part of a Country-wide programme sponsored by the Indian Council of Social Science Research.

Bangla Desh: The rehabilitation and development programme of Bangla Desh is well under way. The prices of essential commodities, rice, kerosene, cloth have fallen sharply as a result of effective control measures by the government and supplies made available by India. Under an agreement concluded in June, Bangla Desh will expand its resource based industries of paper, newsprint and fertiliser to meet India's growing needs and to expand for its own exports to other countries. Its vast natural gas resources are the cheapest feedstock for fertiliser production and its raw material base will help develop paper and newsprint industries. India will make available railway equipment, the continuous casting process for steel making, the supply of limestone from Meghalaya through a rope-way system for Bangla Desh's cement industry, high yielding varieties of rice and jute and cooperation in tea exports. The raw jute aid from Bangla Desh to West Bengal Jute Mills has been referred to earlier. It is planned to increase the trade between the two countries from the present Rs. 5 to 100 crores and to righten anti-smuggling operations in the border areas. Broad principles and areas of cooperation in the field of education, science, culture and sports have been established in an agreement between the two education ministries. A first result was the presence of Prof. Chaudhury, Secretary, Bangla Desh Education Commission at the tenth conference of the Indian National Commission for Cooperation with Unesco in Delhi in June, when further exchanges between the two countries in education and culture were discussed.

Aid: The 13 nation Aid-India Consortium at its June meeting approved a total aid package for India for 1972-73 of $1250 million, consisting of $700 million non-project assistance which included debt relief and $550 million project assistance—as proposed by the World Bank. For 1971-72 the aid amounted to $1085 million. The pledges and indications at the consortium meeting showed that without U.S. aid, India will probably obtain $800 million, $400 million in non-project aid and $400 million in project aid. All countries indicated an increase in their level of assistance compared to last year. Netherlands offered $23 millions a year for two years (compared to $17 million last year), Japan $73 million, mostly in non-project aid, (compared to $ 70 million last year), U.K. £33 million in non-project and £30 million in project aid (compared to £54.5 millions last year), France $75 million, Canada which gives India 25 percent of its total aid, pledged 80 million dollars and similar increases are promised by West Germany, Sweden, Norway and Denmark. The United States has not made any commitment at the meeting. The U.S. contribution to the International Development Association is also not yet made and the result is that though IDA provided $446 million in credit to India, the approved credits for this year including $83 million for purchase of six oil tankers are not being made available. Another problem at the consortium meeting was the question of debt relief to India, which has to repay $500 million this year. The World Bank had recommended a relief of $200 million for this year and the same amount for next year. There was general agreement on the need to provide India with relief but two issues have still to be discussed among the countries. The sharing of this relief between the creditor countries it is felt by some should be on basis so that both the large and small creditors provide the relief—and not only the large ones. The other issue was the feeling

that those who had made hard loans (short term with high interest rates) should provide greater relief. These issues are to be be further discussed and negotiated. The consortium review of India's economic performance after noting the positive aspects, the growth rate in agriculture, the buoyancy in exports and the growing share of engineering exports, the family planning programme efforts and the emphasis on social justice, called attention to our major weakness—the stagnation in industrial development and the need to increase public saving. These are the economy's achilles' heel. The meeting while, calling for a further expansion of exports, did not follow the World Bank recommendation for a slow down in import substitution. The last issue of the Bulletin discussed this issue and suggested that the two should go forward hand in hand.

India-Yugoslavia trade cooperation except in the area of deoiled cakes, hides and skins is still the subject of discussion, particularly on the effects of the devaluation of the rupee and pound sterling, the gold parity clause and the provision for free foreign exchange. Here is a case where the two major advocates of greater trade between developing countries are in the position of not practising what they preach—of not being able to agree on trade between themselves—similar to the problems faced in Indo-UAR trade cooperation. The Netherland Centre for Promotion of Imports from the developing countries (CPI), established by that government as a means of helping to fulfil the Second Decade pledges for greater trade from the developing countries, will provide India with assistance in finding exports for its non-traditional goods in Western Europe. Last year India had a Rs. 5 crore deficit in its trade with the Netherlands. The CPI plans to expand India's export of machine tools and accessories, handloom, silks and leather products so that the Netherlands exports can be more evenly balanced by Indian imports into the country and not continue the present aid financing of 40 to 50 percent of India's imports from that country. The June Canadian interest free 50 year loan of $ 50 million, referred to in the Consortium pledges, is the largest of its kind from Canada and will be used flexibly over this year and next year to import industrial commodities, fertilisers, asbestos, copper, lead, zinc, potash. NPK etc. The loan can be used effectively because of the flexible time period. In the area of pre-investment technical assistance, the United Nations development Programme will make available $10 million a year for the next five years to fill in gaps in the foreign aid programme in the science and technology sector. It will provide sophisticated equipment, high level technical help and fellowships for some pre-investment surveys (including the Ganga-Cauvery link) and in agriculture, scientific research, irrigation and power, transport and communication, industry and minerals, education, housing, foreign trade and computer based projects. In this whole area of aid there is need for further thinking, discussion and agreement on the precise implication and meaning of the Fifth Plan goal of self-reliance (which is not self sufficiency), in terms of gross aid, net aid and debt relief and the foreign exchange gap and their implications for our production priorities.

International:

International Monetary Situation: Three developments in the international monetary situation in June / July have long range consequences. The pound sterling has been floated beyond the 2.5 percent margin agreed under the IMF arrangements. As of July 1 the dollar rate of the pound declined from 2.6 to 2.4525, which is an effective 6.5 percent devaluation of the pound. The floating of the exchange rate of the pound led im-

mediately to the closing for 3 or 4 days of all money markets and to the floating of the Irish pound, switch over of Singapore to the U.S. dollar linkage, the devaluation of the South African rand, and the revaluation of the Russian rouble and the Chinese currency. Exchange controls have been extended to all capital transactions in the U.K. and such controls are now spreading to other countries like Switzerland, Denmark, Japan etc. The British action in breaking out of the Smithsonian agreement and floating its currency has immediate and basic causes. The immediate cause was the intense pressure on the pound following rumours of approaching devaluation. The rise in the Bank rate from 5 to 6 percent did not attract funds from abroad and the treasury reserves were being used to maintain the $2.6 parity. The basic causes were the continued inflationary pressures in the economy, following from the break down of the incomes policy, wage increases outrunning productivity increases, expansionary budgetary policy and declining competitiveness vis a vis the U.S., as the dollar devaluation was beginning to improve the U.S. trading position. From this point of view of the basic factors at work in the British economy, the revaluation of the pound by 8.57 percent in terms of the dollar in the Smithsonian agreement, which meant maintaining unchanged the sterling price of gold, was bound to face a day of reckoning. The real and long term value of the pound was not that. There was an over-valuation of the pound. India's link at that time with the sterling parity is now being corrected—after the usual period of delay and uncertainty. The rupee is being devalued in the same automatic manner as the pound sterling. The second development is the continued rise in the price of gold which was analysed in the last issue of the Bulletin. Against the official price of $38 per ounce, in the London market it is selling at $66 per ounce, and the forecast of the consolidated Gold Fields Limited, London is that if the present trends in demand for gold (which has been increasing at 4.5 percent per annum since 1965) is stabilised and the supply position ceases to deteriorate, the present $60-65 an ounce, will be maintained till the end of the decade ; if the present trends, however, continue, the price will then be $80 per ounce. There is no doubt that it is now time to fix the price of gold at a level which which will (a) reflect the supply/demand position of gold, (b) eliminate speculation, (c) increase international liquidity, (d) distribute the benefits of revaluation in terms of reserves and trade among all countries—those producing or holding large amounts of gold and those not in that position, equitably. In other words time is running out on the next round of international monetary reform. And that is the third development. The International Monetary Funds Executive Directors have recommended to its member States, the formation of a group of 20 members to discuss, negotiate and propose international monetary reform and related issues which comprise (a) international trade, (b) the flow of capital, (c) investments and (d) developmental assistance. The group of 20 will consist of U.S., U.K., West Germany, France, Japan, India and 14 others, who will represent various regional groupings. The proposal will be ratified by early August by the IMF membership and the 20 members consisting of Finance Ministers or Directors of Central Banks will begin work in September at the time of the annual conference of the World Bank and IMF and present a reformed monetary system with accompanying agreements on trade, capital flow and development assistance by September, 1973. This is time consuming but represents a significant step in international economic cooperation and an important contribution to national development. Four heartening features of this development are : First the reform is to be planned and effected by the rich and poor countries together and not by the old the group of 10, which was the rich man's club. Second the need for monetary

reform is now widely and generally recognised. Third the relationship between monetary reform, international trade and development assistance is explicitly recognised. Fourth there is a certain common trend of interest and solidarity between the rich countries and the poor countries in the approach to the problem.

Till now it has been the developing countries which were insistent on linking monetary reform with the trade and aid restructuring. Now it is the United States which has joined the developing countries and others like the Netherlands, and the Scandinavian countries in establishing an integral link between reform of monetary, trade and aid systems. For the U.S. today a meaningful set of monetary rules must be based on the righting of its balance of payments problem, which faces recurring deficits because of the unfair practices of its trading partners. This is precisely the position of India, and the developing countries who are faced with a continuing deterioration of their terms of trade and a growing international payments deficit and debt burden. For the United States the futural structural change in its trade system is very serious. If its present consumption patterns continue, the United States will be importing in the nineteen eighties $20 billion of oil, instead of the present $3.5 million per annum, along with similar increases in other raw materials like bauxite, copper, aluminium, natural gas etc, Thus there will be a very large increase in imports into the U.S., which will require an equally large export of U.S. manufactures to Europe and Japan. This would only be possible if there was an almost complete reversal of present trade policies of Europe and Japan which have enabled them to build up huge surpluses on trade account. The U.S., like every other country, U.K., India, China, U.A.R,, Japan must have a long run balance of payments in equilibrium with the usual annual payments deficits or surpluses which can be settled in reserve assets. That is the background against which the international monetary reform discussions are to take place.

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Agricultural Developments

Rice and Wheat : Kuruvai rice cultivation for the year will be over an area of 5.10 lakh acres using the irrigation water from the Mettur dam. There has been a fortnight's delay in the release of the water this year as compared to last year, because of the delay in the South-West monsoon. The water level in the reservoir on June 15 was 20.5 metres against 19.6 metres on that day last year and shortage was 29,600 million cubic feet compared to 27,400 million cubic feet. However last year the monsoon was on time and the inflow of 9,000 cusecs of water then against 1,000 cusecs this year accounts for the delayed release. The fertiliser requirement for paddy and all crop for the year is computed at 2.74 lakh tonnes. The Union Government has allotted 16,000 tonnes of chemical fertilisers from the pool quota. Additional supplies are expected from the Centre and other State sources and a sound distribution system involving all local bodies should be devised to ensure optimum use. The good supply position of rice has led to the fall in prices from Rs. 37 per bag of 57 kg. to Rs. 33–35, with the retail price at 85 paise per litre—around mid June. The Government has a rice stock of over lakh tonnes for release in needy areas and supply through fair price shops. Madras city is one such area and the Government is planning to open 10 to 12 more Government ratio shops in addition to the existing 12. From stocks released by FCI, arrangements were made

from July to issue 10 kg. of nellore raw rice to card holders at Rs. 1.32 per kilo. The Tamil Nadu Civil Supplies Corporation has taken over 13 large modern rice mills in the cooperative sector which have been idle in order to meet promptly the demand for hulling and also to generate employment. The Government has also proposed to FCI ways and means of reducing the price of wheat in the State from the present 95 paise to 85 paise per kilo. This price reduction is effected by reducing overheads that enter the retail price and arranging for direct delivery of stocks to the retailers instead of passing through a number of intermediate dealers.

Coffee and Tea : The drought has affected tea production in the State and South generally. January to April production in the State, Mysore and Kerala declined by 9 million kg. at 22 million kg. compared to last year's first four months. Sri Lanka also suffered a similar decline in tea production during the same first four months of 1972 by 13.4 million kg. at 58.9 million kg. In fact the world output of tea for this period declined by 3.6 million kg. Due to better performance of the North Indian States which increased the production by 5.9 million kg., the fall in tea production for the Country was only 3.1 million kg. and the exports for the first two months increased by 4.3 million kg. at 31.2 million kg. South Indian tea prices, however, fell by 1.76 percent at 38.21 pence per kg. The largest buyer of South Indian tea is the Soviet Union which increased its offtake by 1 million kg. to 13.6 million kg. in 1971 compared to 1970. The recently formed Tea Corporation is marketing on a large scale package tea for which the market is growing and which also helps the small grower as against the large handling firms. This is an activity which the Corporation should further develop.

The Coffee harvest for the current season is placed at around 70,000 tonnes as against the forecast of 60,000 tonnes reported in Vol. II No. 4 of the Bulletin. Export sales upto April end 1972 from the 1971-72 crop was 5,920 tonnes against 14,430 tonnes from 1970-71 crop in the corresponding period last year. With the help of the International Coffee Organisation, a Rs. 8 lakh coffee promotion scheme is being launched in the coffee plantations of Palani Hills as part of Rs. 40 lakh project which also covers South Wynad in Kerala and Coorg, and Chickmagaloor in Mysore. The organisation is also examining the modern coffee research centre project. A coffee census by the Coffee Board is also underway at a cost of Rs. 8 lakhs as a means of expanding a soft loan programme for small coffee planters by the Board and the Rs. 20 lakh modern warehousing project. With these projects underway, this State is not planning to apply land ceiling legislation to the coffee and tea plantations.

Hybrids : Sunflower will be raised in 80,000 hectares in the State this year and the area will be increased to 1.5 lakh hectares next year, as part of a programme to boost oil seeds production in Tamil Nadu, Andhra Pradesh and Mysore over an area of 1.4 lakh hectares for the two years. Sunflower is suitable for growing in black soils where groundnut cannot grow and in red soil areas where moisture conditions are not favourable for groundnut. The varieties of sunflower now available as a result of much field oriented research are suitable for a rapid expansion of this oil seed. The new varieties have the following characteristics which appeal to the farmer. They have an oil content of 45 percent which sells at Rs. 125-150 per quintal to the vanaspathi manufacturers association. They are drought resistant and evading and have a short duration of 90 to 100 days. They grow in dry lands and recover quickly from moisture stress set backs. The critical period for moisture stress is between its budding and flowering and it is then that adequate

but no more than adequate moisture should be available. It is a dry crop which with proper and moisture conservation practices can lead to good growth and yield. It requires a fertiliser dose of 60 kg. of nitrogen and 40 kg. of phosphate per hectare.

Cotton hybrid H.4 with high yielding quality is now being mass produced in the neighbouring State of Mysore and can be used in parts of this State. Its yield ranges from 35 to 46 quintals per hectare and the kapas fetch Rs. 330 per quintal. It has a spinning potential of 60 counts under mill conditions and yield capacity of 40 quintals of seed cotton per hectare. Cotton seed is a neglected raw material that can meet an oil shortage. The gap between supply and demand for aid is today around 2 lakh tonnes and it is likely to increase to 3 lakh tonnes next year. In this situation, the 20–30 lakh tonnes of cotton seed that is part of the 82 lakh hectare cotton crop should not be thrown away as we do at present. Only 6 lakh tonnes of the 20-30 lakh tonnes are used for oil and another 2 lakh tonnes as cattle feed. Cotton seed has an oil content of 16 to 19 percent and if the remaining 14 to 16 lakh tonnes of cotton seed are used we would have (a) one lakh tonnes of oil, meeting 50 percent of the oil gap, (b) linters to extent of 1.2 lakh tonnes per year for making high grade cellulose for the manufacture of acetate, viscose, rayon and pulp, (c) the hull which is 30 to 50 percent of the cotton seed which can be used as packing material fertilisers, soil conditioners and filters in plastics and insulating materials and (d) cotton meal or cake to feed cattle. Thus the new hybrid cotton varieties can be grown in cotton belts which should have cotton seed processing undertaken so that the best use is made of both cotton and the many bye products— notably edible oil of cotton.

The Fourth Plan final year target for oil seed production is 100 lakh tonnes through the 31 lakh hectares of the groundnut package programme, 1 lakh hectare of short duration aruna castor, 3.5 lakh hectares of the sunflower crash programme, 4 lakh hectares of soya bean cultivation, and mass plant protection to rape mustard crops. The set back last year in Mysore and Andhra Pradesh due to severe drought in the groundnut growing areas must be made up by intensification of programme this year and extended production in this State. The dry land utilisation of groundnut in this State can and must be supplemented by bringing it also under irrigated conditions which will close the gap between our yield of 770 kgs. per hectare and Pakistan's with 1,480 kgs. per hectare and the U.S. with 1980 kgs. per hectare. The high yielding short duration variety MUC–58, Suvin and Karungarni referred to in Vol. II Nos. 2, 3 and 5 of the Bulletin can further increase the yielding capacity. Non availability of good qualified seeds at reasonable cost is holding up soya bean cultivation. The cost of seed is Rs. 192 per hectare and the seed rate 80 kgs. Here there is need for further research and demonstration on high yielding soya bean varieties adaptable to the different agro-climatic conditions of State.

Fruit research at Coimbatore has shown that banana and papaya withstand soil salinity without decrease in production. Some 12 varieties of banana like Vannan, Walha, Ayiranka, Rastali etc. tolerate 4.5 percent salinity while some seven other groups like Ambalakadali, Erachi Vazhai, Neypoovan etc. withstand upto 3 percent salinity. The papaya is even more hardy and tolerates 6 percent of salt contribution. In turn the rapid development of roots deep into the soil overcomes soil salinity. This opens up a large area for further demonstration in the use of saline and alkaline tracts for fruit growing.

Dairy and Fish Farming: As part of the dairy farming plan of action for the State outlined in the last issue of the Bulletin, the 2 lakh litres per day processing plant in Madras is now being established, increasing the city supply by that amount. The existing plants are also being expanded so that the four main cities Delhi, Calcutta, Bombay and Madras will increase their capacity from 10 lakh litres per day to 13 lakh litres. The new plants for the four cities costing Rs. 17 crores will increase the processing capacity by 14 lakh litres per day. The milk processed by the new plant in Madras and the other 3 cities will be distributed through automatic vending machines installed at a number of retail shops. Such distribution through machines instead of bottles will lower the price by 6 paise per litre. The Indian Dairy Corporation has also entered into collaboration with Tetra Pack of Sweden to manufacture paper packs. The paper packs will hold the milk without spoiling for at least 15 days, and though it will cost 20 paise more per litre than bottled milk the saving in milk that will be effected will obviate the need to ration milk in the city. The dairy farming plan of action will also benefit the poor section in the city, under the expanded million programme all children under three years living in the city slums are being supplied with milk. It is now planned to extend this programme to 2.25 lakh children of upto 6 years of age and 40,000 pregnant and nursing mothers in the slums of the city and 18 other municipal towns. The State Government's decision to withdraw the exemption granted to dairy farms under the State's Land Ceiling Act will affect the 15 dairy farms in the State covering a total area of 1,250 hectares. The legislation proposed needs to ensure the spread of dairy farming in accordance with the plan of action among both large and small farmers and to further the devising and improving of the machinery for milk collection.

Further to the fish farming programme, reported in the last issue of the Bulletin, four deep sea fishing trawlers were commissioned at the end of June in Madras. Two 57 feet steel trawlers "Marutham" and Mullai" will be used for deep sea fishing using Madras and Tuticorin as their base. They are equipped with modern electronic and fishing equipment and an insulated fish hold for 24 tonnes of fish. Living accommodation is provided for 9 persons who could stay out at sea for a period of 5 or 6 days. The other two 38 feet trawlers, one of steel and the other of ferro-cement, were constructed locally and will be used by the Inshore Fishing Station in their survey programme off the Madras Coast. These four boats are a first part of 70 trawlers allotted by the Union Government working group to Tamil Nadu out of a Country total of 300. The State Government has offered all aid to those engaged in operating the sea deep fishing trawlers. As the majority of the 70 trawlers allocated to the State must be acquired by private operation, the Government has offered to advance 20 percent of the cost of the trawler as an interest free loan repayable in 8 to 10 years, the balance to be obtained from the nationalised banks. Further the Rs. 1 crore scheme is now in hand for further improvement of the minor ports of Cuddalore, Nagapattinam and Colachel as fishing harbours. Inland fishing is also progressing. For 1971-72 a record catch of 29 tonnes of fish in the moat around Vellore Fort, valued at Rs. 33,000 is reported along with a catch of 120 tonnes at the Sathanur reservoir. This works out to 10,000 kgs. of fish per hectare, a good achievement, involving no expenditure on feeds and fertilisers normally required in fishing development programmes. The main varieties of the inland fish catch of rohu, mrigal, catla, tilapia and chanos can be considerably increased by circulating the moat waters through pumping. The fish culture also counteracts water pollution.

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Industrial Growth

Salem Steel: The exploratory team referred to in the last issue of the Bulletin after a visit to France, West Germany, Sweden, Britain and the U.S. during which the claims of the steel firms who have offered to build machinery for Salem were examined on the spot, has decided, pending similar visits to Japan, Australia and other countries, that the Salem Steel plant will require small sectional purchases of technology from abroad, but not the entire spectrum. It major conclusion is that it would be both more economical and efficient to make these sectional purchases of technology from abroad than trying wasteful experiments at home. The major part of the equipment is being ordered from the Heavy Engineering Corporation, particularly those parts for which the design and technology can be frozen at present levels so that the equipment can be installed by 1977-78 and changes in designs limited to the expansion programmes later on. While the equipment for the other steel plants at Vijayanagar and Vishakapatnam can be supplied entirely by HEC, Salem's product mix of stainless steel and silicon steel sheets is not covered by HEC's range of equipment. The sectional purchases of technology for this product mix will therefore have to be purchased from abroad, while HEC can provide the equipment for coke ovens, blast furnaces, steel melting shop etc. right up to the stage of mild steel production. Again as forecast in the last issue of the Bulletin the land levelling of the 1,335 acres out of the total 6,000 acres site started in early June. The site office of the Hindustan Steel Works Construction Limited, which is undertaking all the civil construction, is now being built. The next stage is to acquire and level some 950 acres for the plant site.

Neyveli: The eight recommendations of the Subramanian Committee summarised in the last issue of the Bulletin have been approved by the Union Government which has asked the NLC Board of Directors to implement them. Accordingly the Board has ordered the equipment to increase the annual lignite production from 3.5 million tonnes to 4.5 million tonnes. The equipment on order at a cost of Rs. 4.87 crores include mobile transfer conveyors, blast hole drill, pipe layers etc. which in two years time will raise annual production by 1 million tonnes. The other major equipment recommendation that futher additional equipment to be established by a study group in order to increase annual production to 6.5 million tonnes is also being acted upon by the Board. This increase is necessary in order to stabilise production at 4.5 million tonnes per annum and to feed the loco, fertiliser and power generation plants at Neyveli adequately. A working group has been set up to prepare a detailed project report for increasing annual production to 6.5 million tonnes per annum. On the labour recommendations of the Committee, the unification of the trade union groups reported under the section, STATE should be noted. The Union Government has under consideration declaring NCL as an essential service under the Defence of India's rules which would prohibit strikes and lockouts in the plant. Both production and equipment maintenance have suffered seriously as a result of continuous labour unrest over the past six months. Due to these many factors only 48 percent of the plant capacity is being utilised, resulting in use of 25 percent of the installed capacity of the B and C plant. Meanwhile for our power starved State, Neyveli power generation which has been 50 percent of its capacity is slowly moving upto 350 MW. Its current export of 145 million units a month in the Tamil Nadu grid should be raised at least to 200 million units per month—which was last year's average.

Bharat Heavy Electricals: The annual report of the Bharat Heavy Electricals Limited (BHEL) makes two significant points. First it is one of the few public sector undertakings which is run on viable lines, to use the chairman's language, "thus consolidating its place among the profitable public sector enterprises." For the year ending 31st March, 1972, the total value of its production was Rs. 59.43 crores, representing an increase of 23 percent over the previous year and a profit of Rs. 319 lakhs compared to Rs. 65 lakhs for the year before. As indicated in Vol. II Nos. 1 and 4 of the Bulletin, the Tiruchi Boiler Plant unit made the major contribution to this outcome. Its production included Rs. 29.15 crores of boilers which are under erection in 15 sites including six new ones taken up during the year and the work at the Port Dickinson Station in Malaysia. The first 100 MW boiler for Obra and three industrial boilers have been hydraulically tested and function normally. The Tiruchi Plant demonstrates a general truth for all heavy industries that in the initial stages of a heavy engineering industry, capacity and results must be measured both in terms of installed equipment and its production but also in the new technological skills acquired by its workers. This latter depends on the number of sophisticated machines designed and built in the plant and this in turn depends on management and proper planning. A second issue relates to the responsibility for the delays in power construction and generation in the Country, in which some share of the blame in the power bottlenecks has been placed on the late delivery of generating equipment—See the section NATIONAL. The BHEL report brings to light the fact that a major share of the blame for the power crisis in the Country is the defective planning, organisation and execution of power projects. For instance, of the Fourth Plan power shortage of 2.1 million K.W., 0.69 million K.W., which is 33 percent of the deficit has been due to the delay in commissioning the schemes for which the equipment was imported. BHEL was responsible for supplying equipment for 0.543 million KW. or 26 percent of the shortfall. And for these schemes, the equipment orders were not placed till July/September 1970 and for 0.4 million KW. of generating equipment the technical details had not been finalised as of July 1972—30 months before the end of the Fourth Plan. The moral is clear. With a well managed enterprise like BHEL, what is needed is for power schemes to be planned well in advance and the project details worked out to the last precise point as early as possible. At least for the Fifth Plan such advance planning and detailed project formulation should start now.

Prestressed Concrete Pipes, Cargo Palletisation, Leather Exports: The Thirukalikundrum and Panruti factories for the manufacture of 60 concrete pipes a day have begun operation. The first prestressed concrete pipe–20 feet large and 66 inches in diameters—was cast at the Tirukalikundrum factory at the end of June. This Rs. 21.30 crore project will make such pipes to carry the Cauvery water from the Veeranam lake over a 219 KM aqueduct. This will be first attempt in the world to convey water in such large concrete pipes. The plant is using the latest principles of prestressing and the improved manufacturing techniques in concrete and steel. The pipes will be joined by special rubber gaskets for which a Rs. 1 crore factory will be established in the State. The project will be completed by 1974 and will add 40 million gallons from Veeranam to the Madras water supply.

The Madras Port Trust is introducing palletisation for certain export cargoes in order to expedite the turn around of ships, reduce losses and simplify the accounting procedures. For handling palletised cargo which will start with case cargoes like mica

and cotton yarn and cargoes in cotton, 6 battery operated forklift trucks will be used. Later palletisation will extend to bag cargoes like coffee seeds, magnesite, tobacco bales and gunnies. Freight concessions for pallets have also been put into force. As a result, the losses and pilferages of landed cargo, particularly liquor, special effects and valuables will be considerably reduced. This is a long standing facility that a major port like Madras needs and its introduction will improve cargo amounts and handling.

The State's finished leather exports are expanding and for the current year will amount to Rs. 4-5 crores out of the all India total of Rs. 6 crores. A U.S. chain store has placed an order for Rs. 40 lakhs of finished leather. Due to sullage problems, West Germany is placing the bulk of its import orders for finished leather in this State. The overseas demand for tanned leather also from the State is steadily rising.

Salt: The 5 million tonnes of salt production in the Country comes from two sources—two thirds from Saurashtra and one third from Tamil Nadu. Thanjavur district produces 10 lakh tonnes, which is 30 percent of the salt production of the State. In the district, the Vedaranyam, swamp which is spread over a 50 KM area from Point Calimere to Adirampattinam provides spontaneous salt in almost unlimited quantities as a result of natural sea action, which fills the swamp in May and June and which is retained by low bunds provided with sluices. Nagapattinam and Vedaranyam produce a dark coloured salt and Kattumavadi produces a white one. The main effort now should be to double production in the two salt producing States to reach 10 million tonnes. For this, there are several problems that call for attention. On the supply side, the salt lands in Vedaranyam are owned by a large number of people, some with 2 acres and others with 200 acres. The State Government has also leased out lands for manufacture of salts. The result is that the productivity of units vary widely from 10 tonnes of salt per acre to 40 tonnes per acre. There are increasing production and sale of salt particularly in Vedaranyam, Adirampattinam and Muthupet. There should be a system of licensing factories in order to maintain production on an even level. The other problem is the familar one of transportation. The salt firms prefer railway transportation but for a long time to come will not have the needed wagons. When the railways get more wagons and rationalise their turn around, other goods like cement and fertiliser whose traffic can pay more will get priority. Hence sea canal transport and the roads system for salt transport must be speedily improved. Vedaranyam is on the sea and a fairly deep port should be created there. Also the Vedaranayam—Nagapattinam canal should be improved at a cost of Rs. 3.4 crores to bring the salt product to the Nagapattinam railway terminus. And this is one area where the all weather roads being planned by the State should be constructed—using if necessary the procedures of cess fund.

Small and Medium Industries: The Small Industries Service Institute is investigating the starting of one electronic estate in Coimbatore and another in Madurai. The electronic estates will manufacture electronic gadgets, electronic goods and instruments. The two estates will cost Rs. 44 lakhs. Travancore Rayons' Rs. 5 crore cellophane plant is being established in the State. The plant will have a capacity of 3,000 tonnes of cellophane and will use indigenous raw materials except in the case of sulphur. The plant which will start production in 1975 is being financed by the merger of IOB with Travancore Rayons and bank loans. The insulator firms in the State and the Country are facing several problems which need attention. While the firms are producing 18,000 tonnes of porcelain,

the demand is less than 15,000. There is no real excess production as the demand for high voltage insulators in the State and Country is still unmet. Further the basic raw materials like feldspar, quartz, chira, oxides for glazing are irregular in supply because of the poor mining methods used. The result is that the product mix is constantly changing, leading to rejection of the product. And finally there is the transportation problem caused by the lack of railway wagons to convey the raw materials from the mine-head to the factory. In this situation there is need for the industry to be helped in certain vital areas such as railway transportation and the placement of orders for insulation by the Government. Handloom exports from the State are suffering as pointed out in Vol. II Nos. 2 and 6 of the Bulletin because of sub-standard practices and material by some exporters. The recent handloom export promotion group which returned after a tour of U.K., France, West Germany and the Scandinavian countries calls attention to the complaints received from Government, officials, chambers of commerce and importers of poor quality, shoddy material and defaulted deliveries. There is need for regulation of standards particularly for exported handlooms. The export demand for fine varieties and cotton garments are increasing, while clock patterns, 'seer sucker' and crepe varieties demand are declining. The ECM quota of $1 million for cotton fabrics has been already utilised and large orders are now being placed for handlooms by these countries. In 1971 cotton garments exports reached Rs. 4 crores, with Europe accounting for Rs. 2.72 crores.

Hindustan Teleprinters as pointed out in Vol. II No. 6 facing declining teleprinters, sales and profits, is diversifying its production programme. Its design unit and workshop has produced the first stamp cancelling machine in the country with no imported component. In place of the 64 machines which were to be imported as part of the mechanisation programme of the Posts and Telegraphs department, Hindustan Teleprinters has now established capacity to produce 40 stamp cancelling machines annually. Costing two thirds of the imported machine at Rs. 6,000, this import substitution effort corresponds to the principle of developing such capacity without imposing a high cost product on the home market. The machine effects 500 to 1,000 cancellations per minute against the 50-80 done manually. The State's fifth distillery at Chingleput is beginning production in September increasing the total alcohol production in the State to 30 million litres. The first two distilleries at Tiruchirapalli and Nellikuppam have a total capacity of 17.3 million litres per annum. The third and fourth distilleries started recently at Panruti and Appakudal produce 11.5 million litres per annum. The Chingleput distillery will have a capacity of 1.5 million litres per annum. There will be no difficulty in the availability of molasses because of the high level of sugar production in the neighbouring areas. In view of the acute shortage of alcohol in the country, because of the reduced supply of molasses, the five units will enable the State to meet all its demand for notable and industrial alcohol, particularly of those produing polycrinyl chloride, polythene and synthetic rubber based alcohol.

Private Sector Reports : Hindustan Motors Limited has started an earth moving equipment plant at Tiruvallur—the second of its kind in the Country. Located on a 400 acre estate, the 125 staff are producing 120 units of rear dump trucks and front end loaders, costing Rs. 10 crores. Its annual production capacity unit increase from 240 rear and dump trucks and front end loaders next year to 600 units of these plus crawler tractors and tractors by 1976. Out of 87 sources of supply for tne plant, 50 are in the State, involving an annual purchase of around Rs, 30 crores of spares and components

from small scale producers in the State. The foreign component will be around 5 percent so that there will be no strain on the country's foreign resources. The market both internal and external is large and growing and the plant may have to expand its capacity still further.

South India Viscose reports for 1971 expanded sales of Rs. 13.63 crores against Rs. 9.77 crores in 1970 and a profit of Rs. 2.89 crores compared to Rs. 1.13 crores for 1970. As a capital intensive industry (Rs. 25.53 crores capital to Rs. 13.63 crores sales), full utilisation of capacity is essential and is recorded, despite the short supply in two of its basic raw materials. Caustic soda has been limited in supply and its price is high. In fact this shortage led to a two month closure of its staple fibre plant. The other shortage is pulp wood—the State Government supply of 1,000 acres of blue gum and 2,500 acres of wattle being far short of the plants' demand. Apart from purchasing from outside the State, the Government is requested to allot the maximum blue gum areas possible and also to allot Eucalyptus grandis area. The company is also purchasing pulp from private parties so that the pump plant capacity can be expanded from 60 tonnes to 120 tonnes a day. The staple fibre plant is also being expanded from 10 to 30 tonnes per day using entirely indigenous machinery. The company has received a letter of intent to instal a polynosic staple fibre plant for the production of 20 tonnes per day. The plant is to use indigenous equipment for the most part with some import of sophisticated equipment. This plant's fibre will replace UAR cotton imports used for finer varieties of yarn. The State's forestry perspective plan is being developed to meet the pulp demands of this important industry. Madras Aluminium reports a poor year with sales and profits declining for 1971 only one group of products – the intermediates like alumina hyderate, calcined alumina and carbon electrode paste registered increased sales from Rs. 49 lakhs to Rs. 61 lakhs. The major problem for the company is its uneconomic scale. In an industry where productive capacity of 1,00,000 tonnes is really the break even point, this small plant with capacity of 13,500 tonnes per year is uneconomic. The immediate corrective is to expand its capacity and its plans to increase production to 25,000 is a modest first phase which should be expeditiously carried out not later than by the end of this year. The other problems faced by the plant have to do with increasing production costs due to rising raw material prices and labour costs – which are also not unrelated to the scale of production, the insufficiency of the excise duty rebate for small firms like this, the need to build the development rebate reserve (transferring to it Rs. 84 Lakhs) and the absence of any price rise in its products permitted by Government. In this situation the plant must go in for a planned programme of diversification and innovation. This the firm is planning with its young and enterprising engineering staff. Anglo-French Textiles reports very good progress especially in its export sales for 1971. Its production of yarn increased from 7.3 million kgs in 1970 to 8.0 million kgs in 1971 and cloth from 37.7 million metres to 44.2 million metres. Its exports increased from Rs. 269.38 lakhs in 1970 to Rs. 491.91 lakhs in 1971, along with a slight decline in domestic sales from 21.6 million metres to 20.4 million metres. The problems faced by the company are internal labour costs rising with inflation) and the quite unnecessary delays in receiving its payments under the export incentive scheme. These internal problems can be corrected. With the improved production of cotton, prices are returning to normal levels and the government delays can and should be corrected. The external problems are serious in that its diversification programme involves using outside processing mills for part of its blended and mixed fabrics and the work done by them is poor and shoddy. This is forcing the

company to set up its upto date equipment for printing and dyeing and finishing. This substandard work is a general problem in both the export and domestic markets which can be corrected by the enforcement of minimum quality standards.

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Education, Science and Health

Start of the School Year: The State Planning Commission's Task Force on Education, Science and Technology held its final meeting in mid July and approved the Perspective Plan for education, science and technology in the State. It is an innovative plan conforming to the widely accepted call for a reformed and restructured education and science system. After its submission to the chairman, a summary of its recommendations will be given in a subsequent issue of the Bulletin. The academic year opened with the announcement by the Government that the 135 teacher training schools in the State will be closed for this year and will not admit any student–teachers. There are today 15,000 trained teachers awaiting employment, some of them from 1968 and another 5,000 will be coming out of the training schools next year. The first task of the State is to employ these 20,000 teachers this year and next year. As all teachers in the State are trained and as we have reached almost 100 percent primary enrolment, these teachers can be employed (a) to improve the quality of education by bifurcating overcrowded urban schools, providing an additional teacher to one teacher school, (b) starting a programme of out of school education for the massive drop-outs (over 50 percent) before Class V and (c) making a start on the adult literacy programme. All these three programmes are part of the innovative perspective plan. In addition the teacher training schools should not be closed but used to prepare functional teaching material for the adult literacy programme and for the retraining, refresher training and upgrading of teachers during the week ends and long holidays. The Union Planning Commission's approach proposals look to elementary education as a source of increasing educated employment. This part of its plan does not apply to Tamil Nadu.

Despite the eight new colleges being started in the State, three in the State sector at Athur, Salem and Palankurichi and five in the private sector at Madras, Vellore and Tharangampadi, the number of students seeking admission to higher education is far in excess of available seats in the colleges. About half the eligible students have been refused admission in the city colleges. Many colleges have rejected those who have scored 400 out of 600 marks in the S.S.L.C. One college admitted only those who had 475 marks and above. Colleges are struggling with 500 to 700 percent the number of applications vis-a-vis available seats. The situation is the same all over the State. Colleges in the Thanjavur district are turning down students with 400 marks and above. There is a strong student/parent preference for private colleges and the English medium courses. In Tiruchirapalli there is a regular invasion by parents and students from other districts for enrolling in one of the private colleges there because of the high performance of students from these colleges in the P.U.C. and degree examinations. (In the last issue of the Bulletin the outstanding performance of Tiruchi high school students in the S.S.L.C. examinations was noted). The result is that the Tiruchirapalli colleges are turning down students even with 500 marks. One of the complicating factors which aggravates the disequilibrium between the availability of seats and the demand for them is the single minded

pursuit by the Government to compensate the discrimination and poverty of the Harijans and the other backward social groups. 18 percent of seats for Harijans and 31 percent for backward classes are reserved in each college and in each separate course. And the regulation is that even if these allocated places cannot be filled by these two poor and discriminated communities, it cannot be filled by others. Here is a case where in the short run, social justice is in conflict with educational progress and in some cases educational excellence. The result of all these factors is a nightmare in the matter of admissions, for students, parents, friends of parents and above all the college authorities. Unacademic procedures are given free play in this absurd situation. There is one very serious proposal to start a college for students who have been rejected because of low marks. There is the temptation to become backward class families and student to gain admission. Another outlet is to admit the second class applicants to the non glamorous—non-commerce, non-mathematics and non-science course. Yet another procedure is to produce recommendations and certificates from all and sundry—which has nothing to do with the student's academic abilities. Then there is the awful development involving the play of money. Donations are collected by colleges for admission of students usually through the sale of tickets for entertainments to be organised sometime in the year. In some colleges there is regular tariff for admission to various courses. This financial institution is gradually becoming all pervading. The appointment of teachers in colleges and schools is also made on the payment of a lump sum ranging from Rs. 5,000 to Rs. 20,000. The college authorities are resorting to this financial mechanism because they claim that the Government grants are insufficient to meet their cost of running the institution—particularly in providing free PUC studies. To eliminate the play of this money factor, there is need to examine the system of financing of higher education, establish a system of tuition fees every year which will allow the colleges to function effectively and viably and abolish the fee-free PUC system. The problem is even more serious at the school level. One recent survey shows that in the free school education system of the State, the following donations are being paid by parents—standards 1-5 Rs. 5 to 25 (the fee for this level before 1964 when free education was introduced used to be Re. 1 to 3). Standards 6-11 Rs. 10-50 (the pre 1964 fee used to be Rs. 3-12). In other words, the parents are paying some schools in donations more than three to five times what they would have paid in fees. In addition of course the State pays a heavy subsidy to the schools. Under these conditions, it seems wise to review the financing of school education and allow some of the good schools to run on a fee basis without State subsidy. The fee should be periodically established by the Government. For engineering colleges, there are 4,000 students seeking admission for the 1170 seats available. The State has appointed a panel to interview the applicants and make a selection. Such selective admission now in force for professional colleges and schools, should also be extended to arts and science college admissions. Madurai University has two University study centres in Madurai and Tirunelveli with an impressive library in each providing students extensive facilities for study of reference books.

Books: The text books in Tamil for standards I-V published for this school year are under discussion among teachers and headmasters organisations. They request decisions by Government on the approved syllabus, the number of periods for each subject and the number of school days. There is room for some flexibility here and avoidance of deadening uniformity. The books are being criticised for being sub-standard, for being subject oriented rather than language oriented and for being partial in

coverage. These comments should be examined objectively. For the next year these books could be prepared at teachers' workshops. The question of the teaching medium in Universities is opened up again in a review of the University text books produced in the regional languages. Of the Rs. 8 crores allotted by the Union Government in the Fourth Plan for the production of University books in regional languages, only Rs. 2.5 crores or 30 percent has been used in the first three years. Why is this? There is lack of support among the intellegentia on this question of teaching in the mother language at the University. But this is the wave of the future. It need not and should not be forced In this State, the statistics of admissions show that (a) there is a rush for admission to the English medium courses and (b) the best students enter these courses and not the Tamil medium courses. While there is no need to force the issue, the problem is a chicken and egg one. Students and parents do not want to enter the Tamil medium courses because for one thing the range of text books in Tamil is limited. They are limited because there is no demand for them. Under these circumstances the need to produce at least one book in Tamil in every discipline is evident and efforts must be made to attain this end. The establishment of a new joint organisation of authors, publishers and booksellers (PAB) at the national and State level in the context of this year being Unesco's International Book Year might help this important programme. Such an organisation will encourage and promote good and genuine authorship which we need, in addition to certifying the print-order of books published and ensuring fair practices between the three components of the book industry as well as between them and the public.

Out-of-School Education: Twenty adult literacy centres are to be started in Madras by the State Social Welfare Board and the State Women's Voluntary Crops. Each centre will have 25 adult students and the whole programme will be financed by the State and Centre. It is necessary that this small programme be integrated into the State-wide programme recommended in the Perspective Plan and be made functional in relation to the needs of the adults in the city. The teacher training institutions in the city should be made responsible for developing the teaching materials for the centres. Again this adult literacy programme of the State should be part of the equally massive out-of-school education programme for the drop-outs from primary schools. The so called drop-outs are the result of the massive poverty of the rural areas and parts of the urban areas. The school in various forms—through part time teaching, staggered hours of education and the sub-school system—will be going out of the school hours and frame to serve this group of children whose total number is a little more than those in school. This also is a programme recommended in the Perspective Plan of the State and is under consideration for all States in discussions in the Union Planning Commission.

Science: The science talent search examination for the year conducted by the National Council of Educational Research and Training has identified some 300 students with exceptional scientific abilities. These gifted students will be offered special facilities to pursue higher science studies. Some 100 further students have also been identified for the award of 25 National Science Talent scholarships by the Indian Council of Agricultural Research for the study of agricultural engineering, home science and animal science. The Union Government has set up a Space Commission to promote the rapid development of space science and technology. The Commission, with Prof. S. Dhavan, Director, Indian Institute of Science, Bangalore as chairman will have its headquarters in Bangalore and become the Department of Space with Mr. Dhavan as Secretary. It will be respon-

sible for the country's programme of exploration over space and the development of space science and technology and application. A refreshing feature of this Commission and department of the Government decision to make them free from all non-essential restrictions and needless inelastic rules. This aspect may well be extended to all science and development departments and activities. The Tamil Nadu Unesco Manram ran a science week for PUC students in the WUC centre in the city. The work was attended by 100 science students who were exposed through lectures, library work and film to modern science developments in the various branches of science. Such science workshops should be organised all over the State to guide students in the selection of science disciplines.

Health : A revealing survey of the career aims and preferences of medical students conducted by the Indian Council of Medical Research (ICMR) shows that : (a) students desire advanced medical training in foreign countries but over 80 percent wish to return home to work; (b) they prefer specialisation in medicine or surgery with dermatology and pharmacology being low in their order of preference; (c) they prefer work in hospitals and institutions because of the facilities and organised setting available there; (d) they are more interested in concrete work involved in diagnosis and treatment and less in scientific abstractions ; (e) the severity of the medical course and its tests and examinations lead 37 percent of the respondents to doubt their suitability for the profession. A further research project of the ICMR is under way on the institutional characteristics of medical colleges concerning student admissions, equipment, the relation of medical education to the mass health needs of the country, and the follow up and career choice of the graduates. One part of the study is related to the content of medical education and its internal coefficients. If the doctor—population ratio is 1 : 1000, the student—teacher ratio for pre-clinicals is 1 : 10 and clinicals 1 : 5, what should be the ratio in the medical colleges ? One of the proposals in the approach to the Fifth Plan which is being widely discussed is the suggestion of the Union Planning Commission to revive the three year medical diploma course to make the doctors needed for the rural people. This is part of the anti-poverty drive of the Fifth Plan and is meant to overcome the shortage of doctors who now go through 5½ years of education. The Task Force on Health, Family Planning, Nutrition and Sanitation of the State Planning Commission which met in early July and finalised the Perspective Plan in Health, Family Planning, Nutrition and Sanitation for Tamil Nadu, (which will be summarised in the next issue of the Bulletin) considered this proposal. It recognised its need and saw its dangers. Social justice requires that all people—both those living in rural and urban areas—are provided with health facilities but it also requires that one group is not provided with first class and the other with second class facilities. The Task Force concluded that Tamil Nadu has and will have a sufficient number of doctors by the start of the Fifth Plan to provide one doctor to every 3,000 persons. Their distribution in rural areas is the problem and should be assured by the Government and society. In States where there is a serious shortage of doctors, a three year course for medical assistants (not doctors) could be started to increase the supply medical and para-medical personnel, provided that after the time bound anti-poverty programme, they are given a further two years training and made full fledged doctors. In a study of the operation of Medical Termination and Pregnancies Act, it was found that since 1st April, 1,100 abortions were performed all over the country. The largest number of abortions were in Tamil Nadu (274), followed by Delhi (235) and West Bengal (230). The State has a board for approving institutions for performing abortions. There is need for increasing

the number of beds in the maternity wards for abortion cases and for a pregnancy counselling service to counsel the emotionally disturbed mothers who usually seek abortion.

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Employment : Under the special employment programme for which Rs. 125 crores were provided in the current year union budget (See Vol. II Nos. 4 and 5 of the Bulletin), the State has launched schemes for employing over 30,000 unemployed skilled and unskilled persons at a cost of Rs. 438.77 lakhs. Tamil Nadu is one of five States which has made a start on this programme and the costs are shared evenly by the Union and State Governments. The Southern Railway has introduced two pilot projects for unemployed engineers. Under the first, unemployed engineering graduates have been offered concessions, such as applying individually or in small groups, being issued permits to offer tenders without earnest money, being allowed to build their security deposits from the railway payment rather than before, when they take up railway construction work upto Rs. 1 lakh. Second all railway contractors doing work for Rs. 10 lakhs and above are required to take 2 engineering graduates and two diploma holders without experience on a stipend of Rs. 150 per month which after six months will be raised to Rs. 250 for the engineers. The Tamil Nadu Youth Service Corps recruitment is under way. In the Madras district, 155 have been selected out of 261 including 47 women who applied.

A study of the 1971 census by the Council of Scientific and Industrial Research shows that there are 1,62,000 scientists, engineers and medical personnel unemployed, which is more than a doubling over the last 1968 CSIR count of 75,000 reported in Vol. II No. 5 of the Bulletin. There are another 32,000 such persons, including 22,000 women who are unemployed but not seeking work. This is of course a waste of scientific investment. Arts and science degree holders have a very high rate of unemployment at 3,85,000. Doctors and Veteranian unemployment was 1.5 percent at the post-graduate and 7 percent at graduate level. Unemployment among engineers is 5 percent, technologists 12 percent, science post-graduates 13 percent, humanities post-granduate 16 percent. Science graduates have 25 percent unemployment and Arts graduates 24 percent. This is a desperate situation. There is need to tailor admissions to higher education institutions to the current and near future need for their services. In addition to creating employment for the educated, self employment is increasing, varying from 2 to 50 percent, depending on the profession. Self employment among engineers has increased from 5,000 in 1961 to 20,000 in 1971 and so too the arts and commerce personnel, compared to agricultural and science personnel. What is heartening in this trend is that the earnings of the self employed are higher than their equivalents in the public or private sector.

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Tata School of Social Sciences

The Tata School of Social Sciences is first institute in the field of social work established in India. It has built up a sound educational training and post-graduate programme. It is today the leading social science institution in the country graduating some 50 scientists in the post-graduate and doctoral degree each year. During the year 1971-72, 77 students were admitted at the Institute. Of these 76 were registered for the M.A. degree programme and one was registered as a casual student. During the Bangla

Desh crisis, the Department of Urban and Rural Community was actively engaged in recruiting volunteers to be sent to the refugee camps in West Bengal and Madhya Pradesh. The National Service Scheme Unit of the Institute intensified its teaching and field programmes and created three study groups to examine the syllabi of the courses in Sociology, Psychology and Economics and relate their content to the field programmes of the National Service Scheme. In the last issue of the Bulletin the address at the Convocation ceremony of the Institute was reproduced.

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I.C.S.S.R. Advisory Committee on Area Studies

The June meeting of the Indian Council of Social Science Research Advisory Committee established a programme for immediate action to promote area studies and international relations research. This involves preparation of a plan for expansion of facilities for research in area studies and international relations spread over the next seven years, that is by the end of the Fifth Five Year Plan. This will also include the programme of coordination to be developed by UGC/ICSSR as both deal with research programmes in these areas. Special grants are to be made available to Centres of Area Studies and International Relations for Development of their Libraries. The UGC is requested to increase the duration of fellowships in area studies to a minimum of three years which can be extended, in deserving cases, up to five years. This is necessary because the student is required to qualify in a language and also to spend about six months for field work in the country of his specialisation. In the meanwhile the Indian Council of Social Science Research should sanction scholarships to such students in deserving and exceptional cases. A journal to be designated as 'The Indian Journal of Asian Studies' is to be started by the Indian Council of Social Science Research. An editorial committee will be constituted to look after the journal. Its staff and financial requirements should be carefully worked out and the first issue of the journal should be brought out by January, 1973.

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Tamil Nadu Unesco Committee

The Ninth meeting of the Tamil Nadu Unesco Committee on 27th June examined Unesco's programme for 1972-73 and offered to the Indian National Commission host facilities in Tamil Nadu for organising an Asian Conference on University Reform in 1973. It requested continuation of Unesco/National Commission aid to the Tamil edition of the Courier and decided to expand its circulation. After the renovation of the temples at Tiruchirapalli and Rameswaram, Varadarjaswami temple at Kanjeevaram is being presented to Unesco for renovation aid. The International Institute of Tamil Studies programme would require around $30,000 help from Unesco in 1973-74. The State Committees will organise a seminar on books during this year—the International Book Year. It briefed the Tamil Nadu Members of the Indian National Commission on the agenda of the Tenth Conference.

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Tenth Conference of Indian National Unesco Commission

The Tenth Conference of the Indian National Unesco Commission meeting in July in Delhi reviewed the work of the Commission for the last two years and noted the new life and activity characterising it under the leadership of its new President—Mr. Nurul Hasan. It decided to request the Indian delegation to sponsor Bangla Desh's admission to Unesco and to propose that Bangla Desh received special Unesco aid in its educational rehabilitation. On education, emphasis was placed on the progress of education for international understanding for which an International Commission should be set up by Unesco to examine the text books of the countries and a national group set up by the National Commission to examine our own text books. There should be special programmes in Asia for the reform of the University and the education of school and out-of-school youth. The science programmes of Unesco should bring greater emphasis on scientific needs of the developing countries and should restore the follow up machinery of CASTASIA. In social sciences the participation of scientists from the developing countries in international research programmes should be strengthened and Unesco should call a conference of national social science research organisations to develop a code of conduct for researchers undertaking studies in other countries. In culture projects on musical instruments, an Asian puppet theatre and the design for living should be pushed forward. In communications, the Hindi edition of the Courier needs special attention. The development of a code of conduct in mass communications should be assured at the next Unesco general conference.

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Summer Workshop on Economics Research Methodology

The concluding session of the Workshop was held on Friday, the 16th June, 1972 at which the Vice-Chancellor, Andhra University presided and the Principal of the University College, the Director of Workshop and the Director of the Madras Institute of Development Studies, together with some of the participants, spoke. Certificates have been distributed to the participants. A clear conclusion of the Workshop is that methodology should become a part of the pre-Ph.D. course. In addition to the publication on research methodology, the Madras Institute of Development Studies will also publish a very valuable outline of mathematical economics and economic statistics produced at the Workshop.

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Seminar on Techniques of Perspective Planning

The following additional acceptance have been received for the September Seminar.

1. Dr. D. Bright Singh,
   Member,
   State Planning Commission,
   Ezhilagam, Madras-5.

2. Dr. A. Chakravarty,
   Director,
   Mechanical Engineering Research and Development Organisation,
   CSIR Campus, Adyar, Madras-20.

3. Thiru T. R. Gnanasekharan, B.A.B.L.,
   Chairman,
   Panchayat Union,
   Uttiramerur, Chingleput Dt.

4. Thiru V. Gopal Samy,
   Chairman,
   Panchayat Union,
   Kurlvikulam, Tirunelveli Dt.

5. **Thiru V. Karthikeyan, I.A.S.,**
Secretary to Government,
Industries Department,
Fort St. George, Madras-9.

6. **Thiru J. Shivakumar,**
Collector,
Coimbatore.

7. **Dr. N. Subramanian,**
Professor of Ancient History,
Madurai University,
Madurai-2.

8. **Thiru Sundaresa Jhevar,**
Chairman,
Panchayat Union,
Pattukottai, Tanjore Dt.

9. Thiru P. N. Vedanarayan, I.A.S.,
Secretary to Government,
Agriculture Department,
Fort St. George, Madras-9.

10. Prof. T. S. Venkataswamy,
Prof. & Head of the Department
of Economics,
Presidency College, Madras-5.

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July Madras Development Seminar

The July Seminar paper, Export-Oriented Industries of Tamil Nadu by Rev. A. Devasia, Head of the Department of Economics, Loyola College together with a summary of the discussion of the paper at the Seminar on Thursday, the 27th July under the Chairmanship of Mr. M. V. Arunachalam, Managing Director, Tube Investments appears as the first article.

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Second Article

Another article—The Innovative Personality—appears as the second article.

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Assessment of the Second Workshop

An article assessing the Second Workshop on Economics Research Methodology by its Director, Dr. B. Sarveswara Rao, Professor and Head of the Department of Economics, Andhra University, Waltair appears as the third article.

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Correspondence

A letter commenting on the rural water supply in the State analysed in the June Seminar paper, 'Development of Irrigation and Water Supply in Tamil Nadu' which appeared in Vol. 2 No. 7 of the Bulletin appears under this section.

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Institute Publications—Book Review

The second publication of the Madras Institute of Development Studies, Economics of Dry Farming in Tamil Nadu by R. K. Sampath and J. Ganesan, Research Assistants of the Institute appeared in June. A review of the book by Dr. V. Rajagopalan, Professor of Economics, Tamil Nadu Agricultural University, Coimbatore, appears as the concluding section of the Bulletin.

EXPORT ORIENTED INDUSTRIES OF TAMIL NADU

by

REV. A. DEVASIA, S.J.,

Professor of Economics, Loyola College, Madras.

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1. The Industrial Landscape of Tamil Nadu

1.1 Tamil Nadu's industrial sky-line has changed amazingly during the last 25 years. The assessment of the Industrial Planning Committee which was submitted to the Government of India in 1948 referred to certain natural constraints on the growth of the composite Province of Madras, such as non-availability of industrial raw materials, like oil, coal and iron, lack of capital and limited output of hydel and thermal power. In 1950-51, the contribution of the industrial sector to the State's income was only Rs. 98 crores. By 1967-68, it had risen to Rs. 285 crores out of a total State income of Rs. 1431 crores. (1)

1.2 The change in the industrial landscape of Tamil Nadu has been impressive both quantitatively and qualitatively. In 1947, Tamil Nadu's industry was largely dominated by the textile industry in the organised sector and by a number of tanneries, match factories and rice mills in the less organised sector. During the last two decades the picture has changed completely. Tamil Nadu's industrial sector has been experiencing a high degree of expansion, diversification and sophistication, and today, it covers a wide spectrum of industrial establishments, small, medium and large, producing a variety of consumption and capital goods both for the domestic and foreign markets. The new dimensions in industrial growth comprise such industries as minerals and mineral based industries, chemical and plastic industries, commercial vehicles and automobile components industries, rubber, electrical and non-electrical engineering goods industries, heavy vehicles, electronics, high-pressure boilers and other industries.

1.3 Twenty years ago, the involvement of the Central and State Governments in industrial activity in the State was almost insignificant. That is by no means so today. The Central Government Sector has indeed made a valuable contribution to the growth of the State's economy by undertaking a number of industrial concerns. Among these are the following : the Integral Coach Factory, Madras ; the Neyveli Lignite Corporation, Neyveli ; the Hindustan Teleprinters, Guindy, Madras ; the Hindustan Photo Films Manufacturing Company, Ootacamund ; the Surgical Instruments Plant, Nandambakkam, Madras ; the High-Pressure Boiler Plant, Tiruverambur, Tiruchi ; the Heavy Vehicles Factory, Avadi, Madras ; the Wig and Leather Craft Development Corporation, Madras ; Madras Refineries, Manali, Madras : Madras Fertilisers, Manali, Madras ; the Atomic Energy Plant, Kalpakkam, Madras ; and the Steel Plant, Salem.

1.4 The State Government's direct involvement in industrial activity is quite recent, though it has been playing a significant indirect role in the industrial development

(1) Commerce : The State of Tamil Nadu : A Survey. July 19, 1969. P.28.

of Tamil Nadu for a few decades now. A strong and broad socio-economic infrastructure is a basic necessity for industrialisation in any region or country. Tamil Nadu's outlay on general and technical education, health, transport, social services, housing and particularly on electricity generation and distribution has been substantial. In fact, electricity is the State's largest enterprise in terms of investment and employment. In the First Plan, the State's actual out-lay on power was Rs. 30.3 crores (37.6% of total outlay); in the Second Plan, it rose to Rs. 78.8 crores (42.4% of total outlay); in the Third Plan it rose to Rs. 100.2 crores (34.4% of total outlay); in the Fourth Plan it is estimated at Rs. 151 crores (30.1% of total outlay) (2). In fact, Tamil Nadu today leads the other States of India in the provision of electricity. Its Electricity Board operates 3 thermal and 12 hydro-electric stations. With the completion of the Atomic Plant at Kalpakkam and the efficient functioning of the thermal Plant at Neyveli, the power need of Tamil Nadu can be adequately met.

1.5 The Government of Madras was the first to establish a State Finance Corporation to assist industries. In 1949 the Madras Industrial and Investment Corporation was established, and since then, it has been giving assistance to industries in the form of loans, underwriting of shares and deferred payment guarantees. Among the beneficiaries of the MIIC are textiles, sugar, paper, chemical, shipping, hotel, pharmaceutical, machine manufacturing, aluminium, insulator, transformer, switchgear and other industries. The State Industries Promotion Corporation (SIPCOT), Tamil Nadu Textile Corporation (TNTC), and the Small Industries Development Corporation (SIDCO) have been playing their respective roles in recent years in the promotion of industries in the State.

1.6 The Tamil Nadu Industrial Development Corporation (TIDCO) was established in 1965 to start, develop and run State Sector industries. It is the responsibility of this Corporation to operate the following industrial ventures of the State Government; Tamil Nadu Cements, Alangulam, Ramnad; Steel Casting Plant, Arkonam; the Southern Petro-Chemical Industries Ltd. (SPCI), jointly with a private entrepreneur; and Tamil Nadu Chemical Products, Karaikudi. (2)

Several other industrial projects like a Potassium Chlorate Factory, a Sodium Hydrosulphite Plant, a Tyres and Tubes Plant, a Borax and Boric Acid Plant, a Calcium Carbide Plant, etc., are expected to be started by TIDCO. In fact, the Southern Petro-Chemical Industrial Complex with a possible investment of Rs. 300 crores may turn out to be the largest industrial complex in Tamil Nadu.

1.7 Tamil Nadu can be justly proud of the 45 industrial estates scattered over the length and breadth of the State. Most of the industrial estates are established by the State Government; some are private or co-operative efforts with financial aid from the State. Most of the industrial estates are of the conventional type sheltering a wide variety of industries; some are functional, like the one for ceramic industry at Vridachalam, leather goods and leather processing industry at Madhavaram and electrical goods industry at Karaikudi. The 1200 acre industrial estate at Ambattur and the 120 acre industrial estate at Guindy are among the best in India.

1.8 The Private Sector still plays the dominant role in the State's industrial activity. Tamil Nadu has indeed been fortunate in having had a number of intelligent and

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(2) *Commerce*; 'The State of Tamil Nadu.' A Survey P. 66.

farsighted entrepreneurs who were quick to seize and exploit the opportunities for industrial and business ventures which emerged in the State in an atmosphere of political stability and enlightened administration in the early years of Independence. Successive Governments gave every possible stimulus to private enterprise and encouraged foreign collaboration. Dr. James Berna, in his book: Industrial Entrepreneurship in Madras State(3), analyses the growth of 52 medium sized industrial units in Madras and Coimbatore areas and refers to the formidable obstacles which Tamil Nadu's entrepreneurs had to encounter, such as shortage of basic raw materials, inadequacy of technical know-how and skilled labour, shortage of capital and constant labour unrest. He gives due credit to our entrepreneurs for their initiative, enterprise and ability to overcome traditional socio-cultural barriers to economic development. If, today, Tamil Nadu holds the third rank among the industrialised States of India and if Tamil Nadu's economy is well-poised for steady growth, the private sector can be justly proud of its great and varied contribution toward this achievement.

2. A General view of Export-Oriented Industries

2.1 The distinction between traditional exports and non-traditional exports is relevant here in the context of the increasing importance of non-traditional exports. The Indian Institute of Foreign Trade, which made a comprehensive study of the export potential of Tamil Nadu in 1969 (4), was fully aware of this important distinction and chose for its survey 72 products mostly belonging to the category of non-traditional exports. In fact, familiar items such as hide and skins, tea, coffee, textile yarn and mill-made fabrics were excluded from its survey.

2.2 Another important distinction is between direct exports and indirect exports. The I.I.F.T. explains this distinction thus: "When the origin of exports is directly traceable to the State, they are taken as direct exports. To this component is to be added indirect exports of the State effected in the form of finished goods sold to parties outside the State, but exported from the country ultimately" (5). For instance cashew products and handloom piece goods originating in Tamil Nadu are exported from outside the State; they are still exports of Tamil Nadu. Similarly, from the Port of Madras are exported iron ore of Mysore and mica and tobacco of Andhra Pradesh; these are not the exports of Tamil Nadu, but the indirect exports of Mysore and A.P. This distinction helps to avoid statistical inaccuracies and ambiguities.

2.3 One wonders whether there are in India or Tamil Nadu industries which are completely export-oriented, i.e., the products of which are sold exclusively in foreign markets. There have been some recent proposals to transfer some British plant and machinery from Europe and set up factories in India which will sell all their products outside India. These would be cent percent export-oriented. We are, however, concerned with all those industries whose products at least fractionally find a place in foreign markets, the problems they face and their solution.

2.4 The export-oriented industries of Tamil Nadu are in fact many and varied and have been the subject of elaborate studies by various agencies, public and private. To

(3) Dr. James J. Berna: Industrial Entrepreneurship in Madras State, Chapter 7.
(4) Export Potential Survey of Tamil Nadu: in 5 Volumes.
(5) Export Potential Survey of Tamil Nadu: Vol. I. p. 2.

mention a few, there are two comprehensive studies by the I.I.F.T.—one on the export potential of India and the other on the export potential of Tamil Nadu. The *Economic Appraisal* of the Government of Tamil Nadu for 1971, the Publications of the various Export Promotion Councils and the Chambers of Commerce and Industry, the Survey of Tamil Nadu's economy conducted by *Commerce* in 1969 and by *Eastern Economist* in 1970 and *Industrial Economist's* Annual Numbers contain valuable information regarding the export-oriented industries of Tamil Nadu and their performance. The scope of the present study is limited. A few important areas are selected from a wide range of possible studies and special consideration is given to their operations and problems.

2.5 Tamil Nadu's export-oriented industries may be divided into several categories. A convenient classification is the one adopted by the I.I.F.T. which is given here in a somewhat modified form: Engineering Industries, Textile Industry, including Handloom and Silk Industry, Chemical, Plastic and Allied Industries, Mineral and Mineral-based Industries, Animal Products Industries, Agro-based Industries, including Tea, Coffee, Tobacco, Cashew, etc., and Miscellaneous Industries, including Handicrafts, Human Hair Products, Synthetic Gems, Spices, Curry Powder etc. (6)

2.6 The I.I.F.T. places the acual exports of Tamil Nadu for 1967-68 at Rs. 70.9 crores and the potential exports for 1973-74 at Rs. 142.26 crores. A break-up of this is given here in Table I.

TABLE I

Exports of Tamil Nadu : (Value in Rs. lakhs)

		1967—68	1973—74
A.	**Surveyed Items**		
1.	Agricultural Commodities/products	213.0	2990.6
2.	Marine Products	56.0	700.0
3.	Animal Products	435.0	869.0
4.	Minerals and Mineral-Based Products	197.1	596.0
5.	Chemicals, Plastics and Allied Products	220.3	666.5
6.	Handloom, Silk Products and Readymade Garments	550.0	1450.0
7.	Engineering Goods	265.2	805.1
8.	Miscellaneous	150.2	354.0
B.	**Non-Surveyed Items**		
1.	Leather, vegetable tanned	3150.0	3500.0
2.	Textile yarn & thread	470.0	550.0
3.	Mill-made Cotton Fabrics	280.0	300.0
4.	Tea/Coffee, etc.	300.0	350.0
5.	Senna Leaves, palm fibres, etc.	150.0	170.0
6.	Fruits and Vegetables (fresh and processed)	150.0	200.0
7.	Engineering Goods	135.0	200.0
8.	Magnesite	100.0	125.0
9.	Spices and Curry Powder	75.0	100.0
10.	Petroleum Products	—	50.0
11.	Miscellaneous	200.0	250.0
	Total Exports (A + B)	Rs. 7696.8	Rs. 14226.2

Source : *Export Potential Survey of Tamil Nadu :* Vol. I. pp. 5—9.

(6) Export Potential Survey of Tamil Nadu: Vol. I. pp. 5-9.

2.7. *Tamil Nadu's Economic Appraisal* for 1971 places the total exports from the State at Rs. 129.81 crores for 1967-68. (7) The difference between the two assessments is explained by the fact that the I.I.F.T. considers only the exports originating in the State, whereas the *Economic Appraisal* considers *all exports from the Ports of Madras*, Tuticorin, Nagapatnam, Cuddalore, Dhanushkodi and Pamban, as well as airlifts of goods from Madras and Tiruchi airports, independently of the origin of the exports. Thus exports of tobacco, iron ore and mica which have their origin in Andhra Pradesh and Mysore are excluded in the computation of the I.I.F.T., but included in that of the *Economic Appraisal*. Details of Tamil Nadu Government's appraisal are given here in Table II.

TABLE II

Exports from Tamil Nadu (Value in Rs. Lakhs)

Commodity		1961—62	1967—68	1969—70
1. Leather		2327	4513	6659
2. Tobacco		508	2363	2169
3. Cotton yarn & thread		197	441	1695
4. Iron ore & concentrates		494	1115	1409
5. Mill made piece goods		....	663	641
6. Handloom piece goods		...	354	418
7. Onions		204	192	239
8. Fish & Fish Preparations		104	123	239
9. Sandalwood oil		100	148	185
10. Mica		212	205	184
11. Human hair		...	94	125
12. Ground-nut (defatted) oil-cake and meal		...	238	105
13. Magnesite Calcined		...	54	82
14. Bidi wrapper leaves		...	66	82
15. Palm Fibre for brushes		...	74	57
16. Hides and Skins		...	46	57
17. Chillies		198	174	55
18. Other commodities		2412	2118	4866
Total	Rs.	6756	12981	19267

Source: *Tamil Nadu Economic Appraisal*, 1971 : pp. 286—69

2.8. Appendices I to V contain details of exports from Tamil Nadu for the years 1962-63 to 1969-70. In 1969-70, Madras harbour handled 82.8% of total exports from the State, and 91.3% of the total imports into the State. (8) In the same year, the 7 largest buyers of goods from the State, in the order of importance, were the U.K., U.S.S.R., Japan, Yugoslavia, Sri Lanka, the U.S.A., and Czechoslovakia, while the 7 largest sellers of goods to the State were U.S.A., U.K., West Germany, Japan, Canada, Italy and U.S.S.R.

2.9. The chief exports from Tamil Nadu in 1969-70 were still traditional items, i.e., leather (Rs. 66.59 crores), tobacco (Rs. 21.69 crores), cotton yarn and thread (Rs. 16.95 crores), iron ore and concentrates (Rs. 14.09 crores), mill-made piece-goods (Rs. 6.41

(7) Tamil Nadu Economic Appraisal, 1971 : p. 282.
(8) Tamil Nadu Economic Appraisal, 1971 : p. 88, 90.

crores), and handloom piece goods (Rs. 4.18 crores). The chief imports into Tamil Nadu in 1969-70 were wheat (Rs. 51.82 crores), non-electrical machinery (Rs. 41.65 crores), electrical machinery, apparatus and appliances (Rs. 16.36 crores), iron and steel (Rs. 13.29 crores) and petroleum products (Rs. 13.20 crores). The total exports from Tamil Nadu which stood at Rs. 87.73 crores in 1964-65 rose to Rs. 192.67 crores in 1969-70, an increase of 120 percent in 5 years. The total imports into Tamil Nadu, which stood at Rs. 165.72 crores in 1964-65, rose to Rs. 258.67 crores in 1969-70, an increase of 56 percent in 5 years. (9)

3. Engineering Industries of Tamil Nadı

3.1. The growth of engineering industries is a positive sign of technological progress and sophistication of a region or country. This is true of all industrially advanced countries. Twenty years ago, India "had only the rudiments of an engineering industry, which aspired to little more than the supply of spares for the transport industries which could not be imported during the war years. Even a beginning was not made in the establishment of an automobile or chemical industry. And the lack of coal and iron, which from the base of industries in West Bengal and Bihar, ruled out the possibility of industrial development which the Government and private entrepreneurs could strengthen and accelerate". (10)

3.2. Today the picture has radically changed. The engineering industries are among the most dynamic and promising industries of the State both from the point of view of exports and support for all-round economic growth. The Engineering Export Promotion Council, Madras, in a recent publication (11) lists the names of 170 export-oriented engineering industries of the Southern Region, i.e., Tamil Nadu, Mysore, Andhra Pradesh and Kerala, which are registered with it. Of these, 114 are located in Tamil Nadu. The value of engineering exports from the Southern Region was Rs. 15.18 crores in 1970-71. Of this, the share of Tamil Nadu was Rs. 8.76 crores, or 58%. All India exports of engineering goods in 1970-71 were valued at Rs. 116.58 crores. Of this the share of Tamil Nadu was 7.5%. In 1967-68, the exports of engineering goods from Tamil Nadu were valued at Rs. 4 crores, which represented about 10% of all-India exports of engineering goods. (12)

3.3. Most of Tamil Nadu's engineering industries are now in the process of expansion. The 12 leading export-oriented engineering industries of the State are listed below in Table No. III with their export performance.

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(9) Tamil Nadu Economic Appraisal, 1971 : pp. 286–89.

(10) P. R: Srinivas. The Eastern Economist, Special Supplement on Tamil Nadu. October 16, 1970. p. 18.

(11) Engineering Export Promotion Council, Madras. Export Performance of the Members of the Southern Region.

(12) Export Potential of Tamil Nadu. Vol. I. p. XIV ii

TABLE III

Leading Export-Oriented Engineering Industries of Tamil Nadu

Sl. No.	*Name of the firm*	*Items Exported*	*Export Performance 1969—70*	*1970—71*
			(Value Rs. in lakhs)	
1.	M/s. Lakshmi Machine Works Ltd., Coimbatore	Textile Mill Accessories, Machined and Unmachined Castings	77.30	210.30
2.	M/s. Ashok Leyland Ltd., Madras	Leyland Chassis & Parts	59.12	202.39
3.	M/s. Easun Engineering Co., Ltd., Madras	Transformers, switchgears, Transmission Line Towers, ACSR Conductors)	88.15	58.49
4.	M/s. V. D. Swami & Co, P. Ltd., Madras	G. I. Manhole covers, Wire Tapes, Galvanised Steel Pipes	20.72	53.48
5.	M/s. T. I. Cycles of India, Madras	Bicycle and Bicycle parts	41.69	40.94
6	M/s. India Pistons Ltd., Madras	Piston, Piston Ring Sets, Aluminium and Grey iron Castings	52.77	38.01
7.	M/s. Hindustan Teleprinters Ltd., Madras	Teleprinters and Ancillary Equipment	4.72	28.16
8.	M/s. Lucas-TVS Ltd., Madras	Automobile and Electrical Equipments	17.72	25.78
9.	M/s. Addison & Co., Ltd., Madras	Cutting Tools & Tool Cutter Grinder	19.19	25.72
10.	The Madras Aluminium Co., Ltd., Coimbatore	Aluminium Ingots & Aluminium Products	—	21.73
11.	M/s. Tube Products of India Madras	ERW — Steel Tubes	4.22	19.87
12.	M/s. Carborundum Universal Ltd., Madras	Coated and Bonded Abrasives	5.91	17.52

Source: Engineering Export Promotion Council: *Export Performance of the Members of the Southern Region*, pp. 1—2.

3.4. The I.I.F.T. made a detailed study of 122 units of the engineering industry in Tamil Nadu and assessed their actual export performance in 1967-68 and predicted their potential exports for 1973-74. Out of the 122 units selected for the study, 67 are located in Madras, 48 in Coimbatore, 2 in Tiruchi and 1 in Tuticorin. Details of this study are given below in Table IV.

TABLE IV

Export Performance and Projection of Engineering Goods
(Value — Rs. in lakhs)

A. Surveyed Items		1967—68	1973—74
1. Domestic electrical appliances (water heaters, electric irons, electric fans)		0.3	5.0
2. Power driven Pumps		18.8	70.0
3. Commercial Vehicles		20.2	330.0
4. Automobile components (valves, wheels, pistons, electrical equipment, brake system, clutches)		26.1	72.1
5. Diesel Engines		1.6	5.0
6. Electric Motors		0.1	2.0
7. Cement, Sugar and Textile Machinery		0.2	100.0
8. Bicycle & Parts		51.0	85.0
9. Transformers		2.0	10.0
10. Switchgears		3.5	10.0
11. Heavy Electricals		12.0	75.0
12. Small Tools		15.0	30.0
13. Teleprinters		2.4	—
14. Surgical Instruments		1.0	11.0
15. All Steel Coaches		110.0	—
16. Boilers		—	—
Total of Surveyed items		265.2	805.1
B. Non-Surveyed items of Engineering goods		135.0	200.0
Total Exports (A + B)	Rs.	400.2	1005.1

Source : *Export Potential Survey of Tamil Nadu* : Vol. I. pp. 7—9.

The I.I.F.T.'s prediction seems very modest. The export of engineering products from Tamil Nadu which stood at Rs. 4 crores in 1967-68 has more than doubled in 3 years, reaching Rs. 8.78 crores in 1970-71. Besides, certain industries for which the I.I.F.T. did not make any forecast, namely, Surgical Instruments, Teleprinters and Boiler Industries, seem to be well set for increasing their export performance. It looks as if the prediction of the I.I.F.T. will be more than fulfilled by 1973-74.

3.5. The I.I.F.T. survey gives details of the direction of Indian engineering exports. (13) Indian transformers are exported to Qatar, Malaysia, Burma, Kenya, Kuwait, Sudan, Tanzania, and Egypt; switchgears to Kuwait, Yugoslavia, Nigeria, Burma and Malaysia; steel structurals to Trinidad, Nigeria, Tanzania, Iran, Kuwait, Burma and Thailand; textile machinery to about 35 countries, the main markets being U.A.R., Uganda, Kenya, East Germany, Sri Lanka and Ethiopia; sugar machinery to Central Africa, Kenya, Guatemala, Sri Lanka, and Nigeria.

(13) Export Potential of Tamil Nadu : Vol. IV. pp. 1—166.

3.6. Ashok Leyland has been exporting its passenger and goods vehicles to Sri Lanka, Uganda, New Zealand, Nepal, and Poland. It has made an intensive export drive in East Europe, Middle East, Africa and Far East to promote its exports. Diesel engines from India are exported to South Vietnam, Cambodia, Thailand, Iran, Iraq, Saudi Arabia, U.A.R., Tunisia, Libya and occasionally to U.S.A., U.K., Canada and Australia; electric motors to Kenya, Uganda, Tangyanika and Kuwait and occasionally to U.S.A., and U.K.; power driven pumps to 40 different countries including Iran, Saudi Arabia, Iraq and Aden.

3.7. Bicycles and parts have quite a number of markets in foreign countries, especially Indonesia, U.A.R., Iran, Kenya, Iraq, Zanzibar, Malaysia, Nigeria, Afghanistan, Thailand and U.S.A. Recently the T.I. Cycles of India, Madras, was given an award by the Government for outstanding export performance in 1968-69, when its exports amounted to Rs. 45 lakhs. Kuwait and Singapore have been buying Indian water heaters. Indian fans have markets in 52 countries, the main markets being Kuwait, Iraq, Sudan and Nigeria. Automobile electrical equipments are exported to a large number of countries including the U.S.A., Federal Republic of Germany, Singapore, U.A.R., Thailand and Kuwait; pistons to Nepal, Burma, South Vietnam, Yugoslavia and Czechoslovakia.

3.8. The Bharat Heavy Electrical's High Pressure Boiler Plant in Tiruchirapalli which has been producing high pressure boilers, high pressure valves, fittings, etc., received in April 1972 an order from Malaysia for the supply of high pressure and other boilers worth Rs. 10 crores. The Company has been participating in several international fairs (in Sweden, Hanover, Frankfurt, Leipzig, Cairo, Sydney, etc.,) and international exhibitions for publicising its products.

3.9. In 1969-70, among exports from Madras Port to Sri Lanka were 72515 tyres, 35416 lathes and machine lools, 58 transformers, 118 automobile chassis, 23 cement making machinery, 11 printing press, 95 centrifugal pumps and 26 textile machinery. In the same year, Tamil Nadu exported 174 contrifugal pumps to Malaysia and 44153 medical, dental and surgical instruments to U.S.S.R. (14).

3.10. Today, India is one of the world's largest producers of entertainment films. Tamil Nadu accounts for nearly half the number of films produced in India. These films were having flourishing markets in Sri Lanka, Singapore, Malaysia, Thailand and other Far East countries. In recent years, with decline in the export of films to these traditional markets, new markets are explored.

4. Problems and Prospects

4.1. One of the main problem of several industries, and especially of engineering industries, is the high cost and limited availability of raw materials, both from indigenous and foreign sources. The units of the Hindustan Steel which supply the raw material for the engineering industries are running short of installed capacity. Apart from fluctuations and uncertainty of supplies, the price of steel is higher in India than in foreign countries and quality inferior to that obtaining in international markets. Another adverse factor is the long distance that separates Tamil Nadu from the sources of production and the shortage of transport facilities. The establishment of the Salem Steel Plant should eliminate some of these difficulties which the industries of Tamil Nadu are now experi-

(14) Study by the Southern Chamber of Commerce and Industry.

encing. Non-ferrous basic materials too are in short supply, partly imported, and priced high, compared to international rates. The I.I.F.T. survey revealed that the cost of raw materials as percentage of total costs was 70 in the case of bicycles and parts, 60 in the case of transformers, 45 to 49 in the case of sugar, textile and cement machinery, 65 in the case of heavy structurals, electrical switchgear, small tools and power driven pumps, 77 in the case of commerical vehicles. [15] To these costs must be added manufacturing cost, producer's profit, packing and insurance cost, freight charges, import duty levied by importing countries, and cost of clearing and transporting goods to warehouses in foreign markets.

4.2. Inadequacy of shipping space, absence of advance information about sail schedules and freightage and high freight rates seem to be plaguing Indian exporters. Industrialists have also complained of discrimination against the developing countries in regard to freightage charged by shipping companies. In fact, only about 20% of Indian exports are carried by Indian shipping companies.

4.3. The agressive salesmanship of the Japanese is well known. But Indian exporters do not seem to be aggressive sellers or publicists in international markets. They seem to lack training, experience and daring. As for the quality of Indian exports, no generalisations are possible, since some of our exports like bicycles and commercial vehicles are of excellent quality and internationally competitive, while some have been reported to be substandard. Indian Embassies and Trade Commissions could play a more active role in providing information to Indian exporters and foreign buyers, Indian exporters have complained of inadequate support and cooperation from Indian Embassies abroad.

4.4. One of the suggestions made by the I,I.F.T. is that Indian exporters should publish in the language of the purchasing countries and not in English, as is done now, details of Indian exports, prices, etc., in order to reach a larger number of prospective buyers. Participation in international trade fairs and exhibitions, invitation to foreign purchasing agencies and traders to visit India, etc., are other means of promoting our exports. In January 1972, a group of design and marketing experts from the world's largest department store, Macey's in New York, visited India, which resulted in a trial order of ready-made garments, knit wear, home furnishing and various kinds of household goods worth Rs. 4.5 lakhs. It is hoped that Macey's would buy Indian goods in a big way.

4.5 The prospects of exports from Tamil Nadu are indeed good. Tamil Nadu has been India's number one exporter of hides and skins and leather. The Union Government's present policy is to restrict the export of hides and skins and promote the leather industry in the country. This has affected the 400 small tanneries of Tamil Nadu adversely. The leather industry has still bright prospects of exports provided it can import sophisticated types of machinery and equipment for producing high quality finished leather, and also keep abreast of changing fashions in importing countries. Collaboration with foreign countries will help to develop the leather industry in the State and its export potential.

4.6 Plastics industry, though recent, has made considerable progress in the State and today there are more than 500 units in the small sector. Among Tamil Nadu's various

(15) The Export Potential of Tamil Nadu : Vol. IV. p. xi.

plastic products special mention may be made of spectacle frames which are being exported to the U.K., Ireland, West Germany, Denmark, Sweden, Finland, Rhodesia, Kuwait, etc. *Tamil Nadu's spectacle frames* are competitive in international markets and their export prospects bright.

4.7 The textile industry, which is one of Tamil Nadu's oldest and largest industries, has been facing recurrent crises from a variety of causes such as obsolescence of equipment and shortage of capital for modernisation, high production costs especially due to high cost and in adequate supply of raw materials, low productivity, labour unrest and competition from synthetic products, especially in international markets. The textile industry in the State has not been able to increase or maintain its exports. The export of mill made piece goods was valued at Rs. 493 lakhs in 1966-67, Rs. 663 lakhs in 1967-68, Rs. 543 lakhs in 1968-69 and Rs. 641 lakhs in 1969-70.

4.8 Tamil Nadu has been the leading producer and exporter of handloom goods. In 1967-68, Tamil Nadu accounted for 20% of the all-India production of handloom goods and 40% of India's handloom exports. The State's production of handloom goods in 1971 was estimated at Rs. 40 crores. The export of handloom products was valued at Rs. 408 lakhs in 1966-67, Rs. 354 lakhs in 1967-68, Rs. 272 lakhs in 1968-69 and Rs. 418 lakhs in 1969-70. The chief exports from Tamil Nadu are lunghis, handkerchiefs, bedspreads, dhotis, sarees, towels and shirtings. Bleeding Madras has lost its foreign markets. Britain's entry into the E.C.M. will affect the handloom and mill products exports of India adversely. It is also unfortunate that Indian exporters have been engaged in cut-throat competition and price-cutting in foreign markets. It is necessary to have some sort of consortium of exporters and control and coordination to promote exports.

4.9 Tamil Nadu's two large tyre factories—Dunlop and the Madras Rubber Factory—are doing extremely well both in terms of production and sales in the international markets. Dunlop products are sold in 71 foreign countries. The M.R.F. starting in 1946 with an initial capital of Rs. 10,000 and 6 workers to produce toy balloons is today one of India's largest producers. In 1961 it secured collaboration with Mansfield Tyre and Rubber Company of United States of America. Its products are sold in 16 foreign countries, including U.S.A. Recently it was given an award by the Government of India for outstanding export performance.

4.10 Today, Tamil Nadu is dotted with a variety of industrial establishments. Modern and sophisticated industries function along side of old and traditional industries. The industrial complexes of Madras, Coimbatore, Mettur-Salem and Tuticorin present bright prospects for future development. The growth of the engineering and chemical industries have been spectacular in the last two decades. Most of them are in the process of growth. Some of them have unutilised capacity. There is great scope for expanding our sales in the markets of the developing countries of Africa the Middle East and the Far East. Our industrialists could also undertake joint ventures and turn-key project in our neighbouring countries. The export possibilities of heavy structurals, commercial vehicles, bicycles, machinery and automobile and bicycle components from Tamil Nadu are excellent. The Government of India's recent policy of granting special import privileges to industries exporting at least 10% of their products should serve as an incentive to our enterprising industrialists and export traders.

APPENDIX I

EXPORTS FROM TAMIL NADU

(Value in Lakhs of Rupees)

Name of the Port		1962—63	1963—64	1964—65	1965—66	1966—67	1967—68	1968—69	1969—70
I. Harbours —									
1. Madras	...	5479	6699	7043	6630	9422	10441	12562	15969
2. Tuticorin	...	752	1223	1088	961	1636	1568	1747	2139
3. Nagapattinam	...	43	66	62	53	111	105	114	108
4. Cuddalore	...	206	100	146	147	170	60	79	49
5. Dhanushkodi	...	316	307	172	42	—	—	—	—
6. Pamban	...	—	—	—	—	156	—	—	—
II. Air Ports —									
7. St. Thomas Mount	...	106	409	261	250	490	801	1142	1002
8. Tiruchirappali	...	32	20	1	—	24	6	—	—
Total	...	6934	8824	8773	8083	12009	12981	15644	19267

Source : Tamil Nadu Economic Appraisal, 1971, p. 282.

APPENDIX II

IMPORTS INTO TAMIL NADU

(Value in Lakhs of Rupees)

Name of the Port		1962—63	1963—64	1964—65	1965—66	1966—67	1967—68	1968—69	1969—70
I. Harbours —									
1. Madras	...	10510	11447	14334	15894	27341	31481	28334	23613
2. Tuticorin	...	295	291	362	489	1064	1644	1230	1180
3. Cuddalore	...	108	145	46	38	322	191	356	271
4. Nagapattinam	...	9	2	19	1	4	180	845	188
5. Dhanushkodi	...	4	3	1	—	—	246	—	—
6. Pamban	...	—	—	1	—	—	—	—	—
II. Air Ports —									
7. St. Thomas Mount	...	104	143	169	149	302	406	1224	603
8. Tiruchirappalli	...	—	—	—	1	—	—	—	—
Total	...	11030	12031	14932	16572	29033	34148	31989	25867

Source : Tamil Nadu Economic Appraisal, 1971. p. 283.

APPENDIX III

EXPORTS FROM TAMIL NADU BY DESTINATION

(Value in Crores of Rupees)

Sl. No.	Country	1961--62	1962--63	1963--64	1964--65	1965--66	1966--67	1967--68	1968--69	1969--70
1.	United Kingdom ...	16.99	19.62	22.95	23.19	21.32	30.63	36.57	35.86	32.62
2.	U. S. S. R. ...	—	—	3.18	7.23	7.76	9.84	9.39	14.94	19.50
3.	Japan ...	6.91	5.83	9.82	10.65	7.85	14.52	18.66	19.17	17.68
4.	Yugoslvaia ...	—	—	—	1.55	1.77	3.01	2.03	5.42	13.16
5.	Sri Lanka ...	10.43	7.71	10.69	8.23	5.67	7.61	7.86	11.73	11.89
6.	United States of America ...	3.55	6.91	6.01	10.31	8.28	8.25	9.55	8.84	10.30
7.	Czechoslovakia ...	—	—	1.71	1.61	0.95	1.20	2.04	3.31	7.05
8.	France ...	2.07	2.06	2.09	2.69	3.12	5.17	4.41	7.09	6.29
9.	Germany (Federal Republic ...	5.49	3.33	3.66	4.50	4.72	7.16	5.22	0.69	5.31
10.	Germany (Democratic Republic) ...	2.01	—	—	1.47	1.91	2.20	3.61	3.06	5.08
11.	Italy ...	—	1.65	2.40	2.29	2.46	6.51	6.16	8.53	4.67
12.	Singapore ...	—	2.23	7.14	1.46	—	1.97	2.39	3.24	3.77
13.	Malaysia ...	2.01	1.83	4.51	1.99	2.75	2.89	2.21	2.73	3.22
14.	Netherlands ...	—	—	1.43	1.54	1.35	1.19	1.83	2.17	2.14
15.	Belgium ...	—	—	—	1.42	1.26	1.56	2.10	2.33	1.71
16.	Other Countries ...	20.11	18.17	12.65	7.60	7.77	16.39	15.78	27.33	48.28
	Total ...	69.57	69.34	88.24	87.73	78.94	120.10	129.81	156.44	192.67

Source: Tamil Nadu Economic Appraisal, 1971, p. 284.

APPENDIX IV

IMPORTS INTO TAMIL NADU BY ORIGIN

(Value in Crores of Rupees)

Sl. No.	Country	1961–62	1962–63	1963–64	1964–65	1965–66	1966–67	1967–68	1968–69	1969–70
1.	United States of America ...	24.23	35.10	40.40	58.39	65.70	114.90	154.27	123.23	105.24
2.	United Kingdom ...	24.89	21.20	23.21	24.69	26.08	41.38	30.21	26.09	22.92
3.	Germany (Federal Republic) ...	13.45	10.13	9.88	15.43	31.31	32.45	23.93	24.95	17.27
4.	Japan ...	4.73	9.64	10.20	9.56	10.39	17.34	23.13	14.23	14.26
5.	Canada ...	...	...	2.50	3.61	3.62	17.81	18.74	17.68	12.48
6.	Italy ...	...	2.94	1.81	4.82	2 29	3.34	4.45	9.93	6.33
7.	U. S. S. R. ...	...	...	5.30	2.99	5.30	12.37	12.58	4.81	5.97
8.	United Arab Republic ...	...	...	...	0.98	2.29	3.34	5.57	2.64	3.99
9.	France ...	2.95	2.00	1.48	2.76	3.64	10.49	7.36	8.02	3.88
10.	Netherlands ...	...	...	1.18	2.28	1.84	1.95	7.14	4.84	3.50
11.	Burma ...	1.73	...	...	...	...	...	0.33	0.12	3.49
12.	Belgium ...	...	...	...	...	2.52	4.13	5.09	2.32	2.30
13.	Australia ...	2.04	1.81	1.32	...	1.47	...	12.41	4.03	2.27
14.	Poland ...	...	...	...	...	...	...	3.07	2.47	2.12
15.	Malaysia ...	0.65	1.05	1.36	...	1.28	1.27	0.84	1.24	0.95
16.	Yugoslavia ...	...	...	...	1.82	1.69	2.87	3.73	2.90	0.89
17.	Other Countries ...	27.74	26.43	22.72	22.00	6.30	26.70	28.62	70.39	50.82
	Total ...	102.41	110.30	121.36	149.33	165.72	290.34	341.47	319.89	258.68

Source : Tamil Nadu Economic Appraisal, 1971, p. 285.

APPENDIX V

IMPORTS INTO TAMIL NADU

(Value in Rs. Lakhs)

Commodity		*1961—62*	*1967—68*	*1969—70*
1. Wheat	...	...	9578	5182
2. Machinery other than electrical	...	...	4784	4165
3. Electrical machinery, apparatus, appliances	...	...	757	1636
4. Iron & Steel	...	963	1723	1329
5. Petroleum products	...	447	211	1320
6. Rice	...	...	863	1158
7. Transport Equipment	...	987	1620	1121
8. Raw Cotton	...	607	1267	725
9. Ammonium Sulphate	...	353	1693	694
0. Urea (Containing not more than 45% of nitrogen)	...	...	514	606
11. Soya Bean Oil	...	...	462	579
12. Maize (Corn) Meal	...	...	323	579
13. News-print Paper	...	224	224	436
14. Cereals	...	1357	1409	354
15. Medical & Pharmaceutical products	...	—	225	286
16. Urea (containing more than 45% nitrogen)	...	...	761	268
17. Milk, & Cream, evaporated, dry or condensed	...	...	211	192
18. Wattle Extracts	...	...	97	166
19. Rock Phosphate	...	...	164	157
20. Crude Rubber	...	...	99	128
21. Copper	...	...	99	128
22. Other Commodities	...	5303	7064	4658
Total	...	10241	34148	25867

Source : Tamil Nadu Economic Appraisal, 1971. p. 288-89.

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In the discussion of the paper during the Seminar on Thursday, July 27, in the Seminar room of the Institute, chaired by Mr. M. V. Arunachalam, Managing Director, Tube Investments of India Ltd., the importance of the total volume of the exports of the country and of Tamil Nadu as a means of paying for the essential capital imports into the country in the context of declining foreign aid was emphasized. In this connection the decline in the country's export trade announced for 1971—72 to 3 per cent as against the Fourth Plan target of 7 per cent was noted with regret. The export oriented industries in Tamil Nadu, particularly the non-traditional exports, have a historical origin. During the recession in the engineering trade in the country, engineering exports received a spurt. However, every export industry must have a firm and wide domestic market. This is important in view of the high cost structure of our industries, to which the World Bank has called attention, together with the recommendation that our import substitutions should be slowed down. The high cost structure of our industry involves their export products being sold at a loss, that is, covering their variable costs at least and making little contribution to the fixed cost element.

Tamil Nadu's balance of trade is not unfavourable despite the figures set forth in Appendix I and II because as Appendix V shows, a number of imported items such as wheat, rice etc., are landed at Madras for use in other States. In fact Tamil Nadu is poised for a large and speedy growth of its exports, given its high level entrepreneurial talent, including the rising generation of small entrepreneurs. It has a sound and well developed infrastructure which has helped dispense its industries and increase its export trade. Apart from the fast growing engineering goods exports listed in Table IV, the Madras Studios which produce 60 per cent of the Hindi Films of the country play a decisive role in their exports. In addition to the exports of some goods like the States marine products, tea, cashew etc., which are exported through ports in other States and therefore do not appear in the Tamil Nadu Tables in the paper, there are new items of exports from Tamil Nadu which are of growing importance.

The new export items from the State which have a large and growing market are: fire-works, hand-made matches, bristle fibre from cocoanuts, leather goods, silk, woolen carpets, tomato ketch-up, dehydrated bananas, mango flakes, handicrafts, curry-powder and deoiled cakes. In addition to the export wing of SIDCO, this growing export oriented large, medium and small industries of Tamil Nadu need the help of organised export and trading houses in the private sector which can channel the State's industrial products to foreign markets, gauge foreign consumers' preferences, help to ensure quality standards and engage in an effective sales policy in foreign markets and countries.

Some of the problems raised by the export industries in the State and country include the problem of discriminatory freight rates. Until the country develops its own adequate shipping services, the export industries will be at a disadvantage in paying the higher rates on foreign lines. Another problem is the entrepot trade where in Indian exports to countries liks U.K., Japan and the Socialist countries are re-exported to other countries at higher prices. Increasingly the services to these third country consumers performed by the entrepot traders should be taken over by our exporters. The emergence of trade blocks, notably the enlarged Common Market is another negative factor in our export trade. Here two remedial actions are called for. First our country must negotiate very carefully to secure the maximum export facilities under the General Scheme of Preferences which operates in the Common Market. There is here a vast potential for our handicrafts and handloom products. A second consequential action is to diversify our export trade geographically and cease our heavy reliance on the United Kingdom and the traditional western market. Our export trade to the third world particularly to other Asian countries and African countries should be expanded and an intensive programme for developing these markets should be planned and undertaken. The one limitation on this area is that the trade must be reciprocal.

The decision to set up 100 per cent export oriented industries under the direction of certain United Kingdom and Netherlands enterprises, if carefully planned and fitted into the general economic and trade policies of the country could add to our export trade and be an important employment generating factor. The problems of control and profit repatriation must be regulated in the country's interest. One of the major pre-conditions for expanding international trade is the system of stable exchange rates. The smithsonian agreement which resulted in an element of stability in our export industries was a positive factor. The floating of the pound sterling and associated currencies is a deterrent factor to our exports. Floating exchanges hit the developing countries' trade particularly hard and Indian exporters face a period of uncertainty and decline in their activities.

THE INNOVATIVE PERSONALITY *

Born or Made

Are innovators born and not made? Are the Gandhis and G.D. Naidus of our land the result of their genetic endowment or the result of the environment in which they were born and they grew up? The State of knowledge of cell biology and the life sciences give us no clear answer as to how far we owe our personality to our biological inheritance. There is a great deal of popular lore in all countries that leans rather heavily in this direction. In our own country the legend explaining the origin of castes is one such case. The Brahmin is born out of Brahma's head, the Kshatriya out of the shoulder, the Vaisya out of the stomach, and the Sudra out of his feet. Similar traditional explanations for the differences between men are offered in all cultures. It may well be that with the cracking of the genetic code we will soon be in a position to condition the mixing of genes, and so produce the innovative man. I recall opening my newspaper at breakfast in Kingston, Jamaica one morning in late November, 1969 and reading about the startling step which had been taken by the Harvard Medical Team led by Dr. Jonathan Beckwith towards, heredity control. The basic chemical unit of heredity, the gene, had been isolated from an organism for the first time by him, twenty-five years after the revolutionary discovery of DNA, the complex molecule presention the nuclei of all living cells. According to some estimates, in another twenty-five years, it may be possible to change inherited inborn traits by injecting new genes and so mass produce great geniuses and innovators at will. Equally the dangers of misusing this control over human life and personality in producing a race of Supermen and intellectual and moral Zombies are fightening prospects that we dare not overlook. But for the present I take the stand that the innovative personality is made rather than born. He is a function of various institutions familial, educational, and societal.

The Innovator

Who is the innovator and what is the make-up of the innovative personality? I have at the start referred to Gandhiji and G.D. Naidu and any one of us can multiply examples of this type of personality many times over. What is it that makes them innovative?

First they are innovative in understanding themselves and this environment. The two, the personality and environment, then become a harmonious part of each other. This seems simple, but it is not. It is not only the England returned Ph.D. or the America returned business executive who feels a stranger in his own land. All of us, whether or not we have been out of our birth-place, our village or town, possess an innate element of rebellion against the society in which we were born. For all of us the grass on the other side of the fence is greener. It is only in poetry or in an alcoholic haze that we declaim, "Every country is my country and all men are my brothers", யாதும் ஊரே யாவரும் கேளிர் or Breathes there the man with soul so dead, who never to himself hath said, this is my own, my native land, or My country right or wrong, my mother drunk or sober. Ingrained

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* Extracts from the address by Dr. Malcolm S. Adiseshiah to the twelfth Conference on Human Relations in Industry Organisation and Environment, The South India Textile Research Association, Coimbatore on August 24, 1971.

in all of us is the desire to grow out of our miliew, to turn instinctively against the known and the familiar. And so a sober appraisal and appreciation of the environment from which he comes and his identification with it, is the first mark of the innovator. That is his infrastructure, his base and his roots, from which he grows and acts.

The second quality of the innovator is his desire and ability to experiment with the parts of his environment which he judges to be in need of change and on that basis to effect the change. The innate feeling of revolt that is in all of us does not always lead to the desire and decision to change. So much of the youth explosion that we have been witnessing for the last three years in Europe, North America and Japan, the burning of the Sorbonne, the barricading of the London School of Economics, the sit-ins and occupation of Universities in New York and San Fransisco, the violent snake dancing of Japanese Youth were a clear and extreme expression of our revolting instinct. But to pass from the negative stage of rebellion to the positive act of planning and executing changes in the established order, demands the capacity to analyse, foresee, predict and act, assuming the necessary risks, and these qualities are not as universally present as the instinct to revolt. About this time last year, the Minister of Education of the Netherlands was consulting me on a Bill which he, on the advice of his educational council, was introducing in his Parliament for a complete overhaul and updating of the country's University system. He had just been to a meeting of the University Students' Union to discuss the draft Reform Bill with the student leaders, but the Union locked their doors against him and refused him entry. The minister's sad comment still rings in my mind : The innovators of yesterday are the only enemies of the innovation for today. Everywhere the revolting youth of yesterday have a feeling of lostness today. It is the ability to analyse and dissect the present order, balance out the costs of and returns to changes considered desirable, and take the final step with the attendant risks of making the changes, that constitute the hall-mark of the innovative personality.

Thus the innovative personality, as I understand it, is one that is on the one hand in harmony with the environment and on the other is one which is constantly seeking, searching and experimenting with changing those parts of it which need change, from the point of view of personal satisfaction and gain and possibly social progress. This is "the great man" about whom our classics tell us that "whatsoever he doeth, that other men also do: the standard he setteth up, by that the people go." In the organisation of production, industrial, agricultural and commercial, and in our economy generally, the entrepreneur-enterprise, embodying the qualities of innovation, invention and discovery, new resources combinations, adjustments and allocations is the essential sine qua non for our economic growth and national progress. In fact, as a country we are on all points poised for an economic break-through and for self-sustaining growth provided we can bring into play the qualities of the innovator. Our only bottleneck is the entrepreneur, the grand master of strategy, the reformer and revolutionary, who can bring his superior knowledge, forecasting ability, human relations and talents into play, on our national environment and vast human resources, particularly our industrial relations.

Institutions and the Innovator

What are the institutional factors that promote or retard the innovative personality? It is to a review of some of these social institutions that I now turn.

The Family : The first institution that shapes our personality is the family and the home. Here we must admit that our family and home are not seed-beds for the growth of the questing child, nor are they promoters of individual and personality development. It is true that as infants from the time we blink open our eyes on the strange, real and disturbing life around us till around 5 or 6 years of age, we seem like the "harmonized one", incarnate. We are consumed by an insatiable thirst for knowledge, feeling, seeing, touching, sensing, smelling, tasting, asking, worrying, and in fact driving our parents and elders to nervous exhaustion and mental fatigue. But after that period, there is instilled in the child a slow and deadly change to quiescence, conformity and passivity. For one thing in our homes, the children who sit quietly with folded hands and impressive countenance, asking nothing of their elders, learning nothing from their peers, who in other words are growing up as silent, statuesque morons are held up as the ideal children. Our familial norm to which we seem to aspire is the comment: look how nice, quiet and well behaved those children are ! Here certainly is no foundation for developing the innovative personality. Equally I do not suggest that we go to the other extreme that I have found in some, societies where the child becomes the master and the tyrant. I can recall sitting through a play in Paris and not being able to hear a single word from the stage, because behind me was a child who kept asking questions in a loud voice all through the play, while his parents, who had apparently been brought up in the doctrine of never being negative to the child, kept patiently answering his questions. The innovative personality begins with the child at home, who must be provided simultaneously a frame of security and an atmosphere of freedom to seek, search and grow in his own way. What this means for a renovation of our child rearing conditions and traditions of family relationships, and the examples and the adventures that members of the family represent in relation to the child is something to which all of us carrying family responsibilities need to pay urgent attention.

The School and Training Institution : The second institutional frame for the innovative personality is the school, which I take here to mean any and every place where a learning experience is to be had. It is here that the innovative qualities of the student can be fully developed, whether in learning science, the agricultural arts or in the fine arts. From this point of view our school system is at present a denial of basic conditions for the development of innovative qualities. We have developed an educational system in which compulsion and freedom is the hallmark, where conformity and not spontaneity is dominant. The student is compelled to go to school. He is forced to choose this subject or read that text-book. He is forced to listen to what he is being taught. He is required to repeat what he has been taught and what he has been asked to read during 1—3 years in the course of 6 or 7 three-hour sessions called examination. If successful, he is given a piece of paper which gives him, if he is lucky or influence wielding, one kind of employment in society rather what he would or could choose for himself. And if he turns away from this system because he or his parents are too poor or the wrong caste or because he is bored to death, we call him a drop out. So too the learning process with its elaborate apparatus has little relevance to life. So much of what we learn and the manner in which we learn it is useless baggage, which has to be jettisoned if one is to find one's way through life. In fact the stages of life theory on which we have been reared as learner, earner, head of family and retiring ascetic, nourishes the false theory and practice that it is possible to be spoon-fed enough education at one time to last a life-time. This time

perspective is even further distorted because the students of to-day born after our independence are being taught by teachers who can only speak of and from a world 4 or 5 decades earlier.

It is against this kind of grim background that we need gradually to introduce a number of changes in the whole learning process. First, learning continues throughout life. Learning is life long. Every year, every month, every day from the cradle to the grave a person learns, is open to learning and must be given the opportunity to learn. Second, such life long learning reaches out to all of life. Education is not the gateway to society. It is the centre of society. There is no sector of life, the family, the school, the business, the club, the farm, the factory, the temple, the hospital, the cinema or the playing field where the effort to learn, to train and develop the part of the individual involved in that sector is not possible. Gradually our schools must cease to have walls, separating them from the market place, our colleges must become inclusive of manufacturing and agricultural activities in their campuses, and per contra all institutions social, industrial and political must have a training and research component built into them. If all this seems somewhat visionary, I would like to tell you what I saw in Cuba, which is a poor country like ours. There every urban school moves out to an agricultural farm or factory location for 6 months every year, and rural schools move to the vacated urban institution. Every hospital, farm and sugar mill has a small training and research programme to which the workers in the place give their spare time. We in this country can move in this direction of making our learning a little more spontaneous, practical and life-long. In particular, we need to give our schools an explicit mandate and status to experiment. We need to create career patterns for our teachers so that innovation is stimulated, establishing innovative information net works which are speedy and selective in their action, creating services which can play a role similar to our fiield advisory services in the agricultural field. In such a frame our schools will become pilot experiments and innovation cases, feeding our society with the talent it requires.

Society and Work : The third institution which is decisive for the innovative personality is society and the place of work. The relationship between the development of qualities that make for innovation and the social-cum-work background of the persons concerned have been the subject of many studies. I wish to refer to two of the most recent ones. A survey of six countries, France, Germany, Sweden, Netherlands, Switzerland and the United Kingdom undertaken by the Organization of European Co-operation and Development reveals two startling conclusions. First, three factors determine the innovative qualities, of experimenting, risk bearing and decision making in an individual, namely, the school, the genetic endowment and the social class and background. Sixty to seventy percent of what I have described as the innovative qualities are traced to the social class and social background of the individual. Second even where there are equal educational attainments between two persons, there are unequal occupational chances for them, if one is from the rich and the other from the poor strata. An even more recent survey conducted by the National Council of Educational Training and Research in our country reveals almost identical results. First 75 per cent of our Secondary School and College students are from the 20 percent of the well-to-do strata of our population. Second up to 90 per cent of the students prefer a person who establishes a factory and provides employment to several hundreds of his countrymen rather than the person who wishes to be an ascetic and blaze the path of goodness for the country. An even greater plurality,

up to 98 per cent, expresses a preference for the purposive accomplishing type of person rather than for the person who passively seeks to enjoy his life as it comes. Despite this, this-worldly, modernistic out-look or probably because of it and the class composition of our educational system, a recent spot-check indicates that the majority of those employed in creative occupations are drawn from the strata of less than one per cent of our population.

The insight behind these current analyses of economists and sociologists, that creative and innovative personalities are a function of the kind of society that exists, was realised a long time ago by poets, national and foreign: "பிறப்பொக்கு மெல்லா உயிர்க்கும் சிறப்பொவ்வா செய் தொழில் வேற்றுமையான்." Or again, Full many a flower is born to blush unseen and waste its sweetness in the desert air. The development and increase of creative innovative personalities are related to the level of growth of a society and a fairly equitable distribution of both the productive system and the fruits of its development. A poor society sets severe limits to the supply of its creative talents. A sluggish society will offer no opportunity for change, experimentation and progress. A society characterised by a marked degree of distributive inequality will waste its vast potential for innovation.

Towards increasing our Innovators

The growth, development and expansion of our much needed innovators depend on an inter-locking programme that will increase production, improve our redistributive frame and reorient all our learning processes from the family to our place of work in order to promote experimentalism. This is an interlocking and inter-related complex, which like the chicken and egg circle, cannot be listed or separated into cause and effect. We need to move on all three facets simultaneously. As I have pointed out earlier we are on the eve of a serious and sizable expansion on our production front. Our agricultural expansion could be of the order of six to eight per cent, our manufacturing and mining growth should move up from the current 6 to 10 to 12 per cent and our tertiary sector which has the greatest employment potential can and should register an equivalent expansion. Simultaneously there should be a rapid redistribution of our consumption goods and resources on which we have made a satisfactory and possibly optimum effort as far as urban fiscal and legislative action is concerned. What is needed here is for an equivalent effort with regard to rural income redistribution, particularly combating the rural protein hunger with its irretrievable damage to the brain of our future innovators, promoting voluntary consumption restraints on the part of the well to do sector, and above all some shifting to modes of production which makes for greater social and economic equity, such as the intensive development of the small or marginal or dry farm, the small industry and the greater participation of workers in the enterprise in which they are involved, which might also help observe some limits to wage-price spirals. The third wheel to this innovation chariot is the whole learning and training process from the home to the place of work wherein the qualities of reflection, analysis, decision making and experimentation can be both nurtured and widely and readily identified. We need to orient the learning system so that it may help develop talent, and even more urgently help identify the potential innovators, in a manner reaching out to all strata of society, including and particularly the poorest. It is under such conditions that the innovation producing individual can become the catalyctic agent to move the country forward along paths of improved and increased levels of living.

REPORT ON THE SECOND WORKSHOP ON RESEARCH METHODOLOGY IN ECONOMICS

by

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1. Introduction :

The Second Workshop on Research Methodology in Economics, organized by the Madras Institute of Development Studies in co-operation with the Indian Council of Social Science Research, met in the Department of Economics, Andhra University, from 8th May to June 18th, 1972. It was inaugurated by Dr. Malcolm Adiseshiah, Director of the M.I.D.S., on May 8th at a function presided over by Sri L. Bullayya, Vice-Chancellor, Andhra University. The Second Workshop, similar in many respects to the first one, held in the summer of 1971 at Tambaram, Madras, under the Directorship of Dr. C. T. Kurien, was designed to meet the need of research scholars in economics working in South Indian Universities for training in research methods. The principal objectives of the Workshop are to provide an opportunity to the young research scholars working in these Universities to gather in one place for a period of 6 weeks for an intensive study of research methods, the scope and focus of their research problems, and modern developments in some important areas of economics. Keeping these aims in mind, the Workshop had arranged for the preparation of a number of basic papers on research methods and also a few papers on modern developments in economics for the use of the participants, and a basic course of instruction in Mathematics and Statistics for the benefit of the participants. The Workshop had also arranged for a number of distinguished Economists from all over India to visit the Workshop as Resource personnel, week by week, with a view to enable the participants to have intensive discussions with them in study groups and in individual conferences. The band of research scholars who gathered at Waltair from different Univerities in the month of May '72, quickly came to understand the spirit of the Workshop : and it was a pleasure to see them working through the six weeks period of the Workshop seriously and at the same time in a happy mood, despite the unusually hot summer during this year.

2. Preparatory Work :

With his characteristic drive and imagination, Dr. Adiseshiah, Director of the M.I.D.S., had taken the initiative for organizing the Second Workshop also. At a preparatory meeting of the Heads of the Departments of Economics in the South Indian Universities, which he convened at Madras in December '71, the programme of the Workshop was considered and discussed in all its aspects, and the following decisions were taken :

(i) The total number of participants should not exceed 30, and the representation of each University was to be based broadly on the number of scholars actively working in the University. It was also agreed that participants should be either scholars who had recently registered for Ph. D. or were planning to register ;

(ii) The Heads of the Departments of Economics in the Universities should be requested to recommend the candidates ;

(iii) A properly designed course in Mathematics and Statistics should be given as part of the regular programme of the Workshop. At the meeting, the members present spent considerable time in discussing the contents of the course, and also agreed that the course should be given by the staff of the Economics Department of the Andhra University;

(iv) A few basic papers on research methods in economics prepared by experts and specially commissioned for the Workshop, should be made available to the participants in advance ;

(v) Two senior Indian Economists were to be made available to the Workshop as Resource personnel every week besides the Director ;

(vi) The Workshop programme would include the course in Mathematics and a review of basic papers, and discussion of the research problem selected by the participants in groups and in individual conferences with Resource personnel. It was also agreed that, except for the formal lectures in the course in Mathematics and Statistics, the Workshop would not provide for other formal lectures, and the weekly programme of activity would be largely decided by the participants themselves. It was further decided at the meeting to divide the participants into three groups, viz., Agricultural Economics group, Monetary Economics group and Development Economics group, for the purpose of organizing discussions in smaller groups ; and

(vii) Finally, the suggestion to hold the Workshop in the Andhra University, Waltair, was accepted.

Dr. Adiseshiah, besides taking the initiative in this matter had also undertaken the major preparatory tasks of the Workshop, viz., (i) to invite the Heads of Departments of Economics in the various South Indian Universities to recommend participants ; (ii) to commission the basic papers on research methods and modern development in economics, and circulate them among the participants in advance ; and (iii) to write to a number of leading economists in the country soliciting their co-operation and persuading them to visit Waltair as Resource personnel.

3. **Participants :**

The final list of participants in the Workshop came to 33 in number. All the South Indian Universities sent their nominations, except Bangalore. In April, '72, the ICSSR, which provided the finances for the Workshop, advertised the Workshop in the newspapers and in response to this advertisement, a large number of applications were received from other Universities, particularly from the Universities in the North. Unfortunately, only two of them could be accommodated and the rest of the applications had to be rejected. Only one of the two, representing the Ravi Shankar University, finally joined the Workshop.

Fifteen of the participants are working for the Ph.D. and got registered only in 1971. Seven are working for the M.Litt. The others have not yet registered for the Ph.D. or M.Litt. but are hoping to do so soon. Fifteen out of the 31 participants are also working as lecturers in constituent or affiliated colleges. Some of them have not yet selected their research problems. There is a great deal of diversity in the topics selected for research by the participants. Six of them are working in the area of Agricultural Economics, including agricultural credit and marketing ; six are working in the area of Central and State Finance ; five are working in the area of regional economic problems ;

six are working in the area of industry and transport, and the other eight are working in the broad areas of economic development, development strategies and underemployment in rural areas. Except for four of them, the participants had no previous training in Mathematical and Statistical methods, although, a number of them had taken an elementary paper in Statistics at the M.A. level. Most of them also came to the Workshop with only general ideas about the scope of their research topics. It was learnt from the participants that a good number of them, although they have been working as research scholars for the past six to twelve months, did not have intensive discussion with their supervisors regarding the scope and focus of their research work.

4. Workshop Sessions :

The morning sessions of the Workshop commenced every day at 8 a.m. and the first hour-and-half was devoted to the course in Mathematics and Statistics. It was followed by the review of a basic paper from 9-30 to 10-30 a.m. After coffee break, from 10-30 to 11 a.m., the participants were divided into groups and group discussions centred around the broad areas of research and the specific problems selected by the participants. A visiting Resource person or one of the staff members of the Department of Economics Andhra University was made available to the group to guide the discussions. In the afternoon, after lunch, between 3 and 5, Resource persons were available for holding individual conference with the participants and the participants were also given time to do library study. Most of the reading material required by the participants was made available in the Department Library.

My colleagues in the Department of Economics, Sri V. Lakshmana Rao and Dr. N. Rajagopala Rao, who gave the course in Mathematics and Statistics, proceeded on the assumption that the scholars had no mathematical backgroud. The lectures began with the number system, elementary algebra and geometry. My colleagues took a couple of months for preparing lectures on Mathematics and Statistics before the commencement of the Workshop, and a bound volume containing all the lectures including applications in economics and a number of take-home exercises, was supplied to the participants on their arrival at Waltair. It is gratifying to find that the participants found the course in Mathematics and Statistics very useful. Most of them felt that the course made them familiar with the various mathematical and statistical concepts which frequently occur in economic writings. Most of them also felt that in order to master the subject-matter and take full advantage of the course, it was necessary for them to have the guidance of qualified instructors for doing exercises given daily at the end of the lectures. Arrangements were made in the Workshop to give some guidance to the participants for doing the home exercises, but it was obviously not possible to provide adequate guidance within the framework of the Workshop.

The review of the basic papers in the morning sessions before coffee-break was not always as exciting or fruitful as one would have expected. The major handicap faced by the Workshop in this respect was the non-availability of more than half the number of Resource persons who originally agreed to visit Waltair and guide the Workshop. During the first week, Dr. Adiseshiah and Dr. Ramaswamy from Annamalai University were available to the Workshop and unfortunately Prof. Goutam Mathur could not join the Workshop. During the second week, the Workshop had the benefit only of Dr. C. T. Kurien's guidance and help. Dr. Shanmugasundaram was unable to come. Dr. T. Rama-

mohana Rao from the I.I.T., Kanpur, and Dr. Joseph from Tiruchirapalli were both able to join the Workshop during the third week. During the fourth week, both Prof. S. K. Bhattacharya, Calcutta University and Prof. Brahmananda, Bombay University, were not able to join the Workshop. During the fifth week, Prof. Sonachalam and Prof. Neelameghan were fortunately available to the Workshop. But again, in the sixth week, both Dr. S. N. Sen and Dr. N. Srinivasa Raghavan were unable to join the Workshop.

On several days, the Workshop had to rely on its own resources for the review of basic papers. The Workshop took advantage of the presence at Waltair of Dr. G. Parthasarathy, Professor and Head of the Department of Co-operation and Applied Economics, Andhra University and Dr. K. Krishna Murty, Institute of Economic Growth, during the period of Workshop, and both of them participated in the review of the basic papers which they had written for the Workshop. At the invitation of the Workshop, Dr. T.V. Avadhani, Professor and Head of the Department of Statistics, Andhra University, delivered two lectures on population projections.

It was a rather unfortunate experience of the Workshop that some of the basic papers (for instance, the three papers on model building) were far above the standard of the participants, and some papers were more concerned with cataloguing and listing of problems rather than analysis. Most participants expressed the view that a few basic papers on the actual research problems selected by the participants would have been more useful.

The third major and most important activity of the Workshop sessions was the discussion of the broad areas of research and the specific research problems selected by the participants in study groups and in individual conferences with the Resource personnel. Here again, the Workshop ran into some difficulties because a number of Resource Personnel could not join the Workshop, and those who joined the Workshop were not specialists in all the areas of research selected by the participants. Fortunately, these difficulties were overcome to some extent by the Director, by making the services of a few his colleagues in the Department of Economics, Sri K. V. Ramana, Sri S. Chandrasekhar, Sri V. Lakshmana Rao and Dr. N. Rajagopala Rao, available as group leaders or guides. The participants were divided into six groups for the convenience of group discussions: (1) Agricultural Economics (2) Central and State Government Finances, (3) Regional Economic Problems, (4) Economics of Industries and Transport, (5) Population, Technology and Employment, and (6) Development Strategy and Finance.

During the first week of the sessions, each one of the participants was asked to identify his problem of research and prepare a short note on the importance of the problem, reasons for the choice of the problem and the tentative central hypothesis which he had in mind and by what methods he proposed to investigate the problem. He was then given an opportunity to discuss his note in group meetings and also in individual conference with the Director and other Resource Personnel available. The Department Library provided the required reading material for the participant. Each Scholar revised his note two or three times during the period of the Workshop, in the light of his discussions in the group meetings and with the Resource Personnel, and he presented his final draft to the plenary session of the Workshop during the last week. This technique, more than anything else, kept all the participants active and interested during the whole period of the Workshop. As a result, the Workshop ended with a happy feeling for every one

that he was able to define his problem more sharply, understand its scope and focus, and what methodological tools to use. The scholars were also able to judge the need for field survey in the case of some research topics, what sampling methods to use and how to construct questionnaires and schedules for field survey. The sessions of the last week of the Workshop, the valedictory function and the valedictory dinner gave sufficient evidence of the success of the Workshop. The participants left Waltair with the satisfaction of understanding the nature of research as an intellectual activity and the imperative need for organizing research in a systematic way, and for every scholar to get totally involved in his research pursuits.

6. Some Lessons of the Workshop :

(i) One of the problems which came up, interestingly enough, in the very first week of the Workshop, was whether the research scholar of to-day possessed the necessary linguistic-logical skills for the pursuit of advanced studies and research. The subject again came up during the fifth week when one of the resource persons, Prof. Neelameghan addressed the Workshop on the subject, "Guiding Principles for arranging and expression of ideas". It cannot be taken for granted that research scholars possess the necessary English language skills and are well-versed in the art of proper organization of ideas and their presentation. It is worthwhile that Workshops and Training Courses in Research Methodology pay some attention to this important problem.

(ii) The Workshop made it clear that an intensive short course in Mathematics and Statistics necessary for research scholars in economics can be successfully given with adequate preparation. But, as the participants in the Workshop expressed it, the success of such a course depends on the ability of the participants in doing some exercises at the end of each day, which in turn depends on help from qualified instructors. Perhaps, the availability of one qualified instructor in Mathematics and Statistics for three or four participants will meet this need, and the organisers of Workshops and Training Courses in Research Methodology should not hesitate to make provision for such help to the participants.

(iii) The idea of circulating in advance, specially commissioned papers on research methods is a good one. But, it is clear from the experience of the Workshop, that basic papers which deal with the application of research tools, as for instance, in the case of population projections, demand and supply projections, estimation of elasticities, building econometric models, with reference to specific situations or countries, will be more useful to the participants. As some of the participants in the Workshop pointed out, it may be more profitable to commission the basic papers in the areas of research selected by the participants.

(iv) There is need to give a little more emphasis to the study of design of sample surveys and construction of schedules and questionnaires. A few of the Workshop sessions could be profitably devoted to the discussion of the surveys actually conducted by the N.S.S., the Reserve Bank of India and other organizations.

(v) One of the week points of the Workshop appears to be the excessive diversity of areas of study selected by the participants. This tends to reduce the effectiveness of group discussions. It also makes it difficult for the organisers to secure enough number of specialists as Resource Personnel to help and guide the participants.

(vi) The Workshop method of not arranging any formal lectures by eminent economists may not always be effective. A few formal lectures delivered by the Resource Personnel on themes pertaining to their own fields of specialization, are likely to have a wholesome impact on the minds of young research scholars, and can easily fit into the scheme of a Workshop. In fact, as the experience of the Workshop shows, some of the Resource Persons felt that they had not enough work to do for a whole week.

(vii) A few lectures by eminent social scientists highlighting the interdisciplinary aspects of research, particularly relating to development problems, should also find a place in the programme of a Workshop on research methods.

(viii) Finally, there is perhaps the need to organize seminars for research guides with a view to examine in depth the role of the research guide and the problems of guiding research. It is not uncommon to hear research scholars making complaints against their guides. After all, research is a kind of adventure—an attempt to discover the unknown, and as one writer said, the unknown should be regarded as unknown to both the research scholar and the research supervisor. It will be necessary for the research supervisor to devote enough time to the research scholar especially in the early stages, and to consider the research student more as a collaborator than as a student.

Reflecting on my experience of the forty days, I will say without hesitation that the Workshop has been a success. The credit for this should go to the dynamic leadership of Dr. Malcolm Adiseshiah, the unstinted co-operation extended to me by all my colleagues in my Department, the Resource Personnel, our Vice-Chancellor Sri L. Bullayya, and above all, to the high sense of responsibility and the generous spirit of the participants.

APPENDIX I

SECOND WORKSHOP ON ECONOMICS RESEARCH METHODOLOGY—LIST OF PARTICIPANTS

GROUP I : Agricultural Economics

	Name	*University*	*Year of Registration for M.Litt./Ph.D.*	*Subject*
1.	Mr. B. Shankara Rao	Andhra	Ph. D. — 1971	Agricultural Production Functions.
2.	Mr. B. S. Nagarajan	R.I.H.E., Gandhigram	Not registered	An analysis of economic holdings in Madurai Dist., Tamil Nadu under varying agro-economic situations.
3.	Mr. P. Jagannadhacharyulu	Andhra	Ph. D. — 1971	Long Term Finance for Agriculture and Land Mortgage Banks.
4.	Mr. P. Adinarayana	Andhra	Ph. D. — 1971	Role of Anakapalle Regulated Market and Co-operative Marketing Society in Marketing of Gur.
5.	Mr. S. G. Sholapurmath	Karnatak	Ph. D. — 1971	Agricultural Finance through Co-operative Societies in Mysore State.
6.	Mr. C. B. Dayalan	Madras	Ph. D. — 1971	Commercial Banking.

GROUP II : Government Finance

1.	Mr. M. Vivekananda	P. G. Contre, Guntur (Andhra University)	Ph. D. — 1971	A Study of State Finance of A.P. (1956–57 to 1971–72).
2.	Mr. C. Harichandran	Annamalai	Ph. D. — 1971	Panchayat Finances in Tamil Nadu.
3.	Mr. M. Padmanabhan	Mysore	Not yet regd.	Finances of Mysore State.
4.	Miss K. Geervani	Sri Venkateswara	-do-	Burden of Public Debt in India.
5.	Miss B. Kusumakumari	Andhra	Ph. D. — 1971	Incidence of the Budgets.
6.	Mr. K. Narasimha Reddy	Osmania	Ph. D.	Taxation of Capital Goods in India.

GROUP III : Regional Economic Problems

1.	Mr. K. Lakshmaiah	Sri Venkateswara	Not registered	Regional Development in Rayalaseema.
2.	Mr. G. Elumalai	Madras	M. Litt.	Regional Economic Development.
3.	Mr. V. V. Singh	Madurai	Ph. D. — 1971	A Quantitative Economic Analysis of Allocation of Resources in Tamil Nadu.
4.	Mr. K. Rajamanickam	Madras	M. Litt. Feb. '72	Problems of Regional Income estimation for Tamil Nadu.
5.	Mr. A. K. Ramalingam	Annamalai	Ph. D. — 1971	A study of Fluctuations in Land values in Chidambaram Taluk.

GROUP IV : Industry & Transport

1.	Mr. S. G. Gambhir	Karnatak	Ph. D. — 1971	Economics of Silk Industry, Mysore State.
2.	Mr. V. S. Angadi	Karnatak	Not yet regd.	Investment and Location of Sugar Industry in the Mysore State.
3.	Mr. V. Balakrishnan Nair	Calicut	Ph. D. — 1972	Problems and Prospects of Timber Industry in Calicut.
4.	Mr. K. Rajeswaran	Madurai	M. Litt.	Sivakasi Match Industry.
5.	Mr. B. C. Moses	Madras	Ph. D.	Entrepreneurship in Tamil Nadu.
6.	Mr. B. A. Prakash	Kerala	Ph. D. — Feb. 1972	Evaluation of R. T. C. in Kerala.

GROUP V : Population Technology & Employment

1.	Mr. C. Murukudas	Madras	M. Litt. — 1970	Population Growth & Economic Development of India since 1950.
2.	Mr. Y. G. Jayaram	Osmania	M. Litt. — 1971	Choice of Techniques with special reference to Handlooms.
3.	Mr. G. Gopala Reddy	Osmania	Not registered	Alternate Prospects for Labour in Telengana.
4.	Miss Usha Chaubey	Ravishankar	Not registered	The Problem of Underemployment in the agricultural sector of Raipur District in Madhya Pradesh.

GROUP VI : Development Strategy & Finance

1.	Mr. V. Gandhi Babu	Andhra	Ph. D. — 1971	Savings and Capital Accumulation in India.
2.	Mr. A. L. N. Murty	Osmania	M. Litt.	Deficit Finances—Inflation & Economic Growth.
3.	Mr. K. Pratap Reddy	Osmania	M. Litt.	A Case for heavy Industry strategy for Economic Growth.
4.	Mrs. P. Sumangala	Madurai	M. Litt.	Cost-Benefit Analysis of Family Planning.

Participants with the permission of the Direector without financial commitment to the Workshop

1.	Miss P. Leela	Andhra	Ph. D. — 1969	Import Substitution in Indian Economy.
2.	Mrs. K. Ranigopal	Andhra	Ph. D. — 1970	Economics of Health.

APPENDIX II

SECOND WORKSHOP ON ECONOMICS RESEARCH METHODOLOGY — LIST OF BASIC PAPERS

	Name of Author	*Designation*	*Title of the Basic Paper*
1.	Prof. V. Shanmugasundaram	Professor & Head of the Dept. of Economics, University of Madras, Madras-5.	Recent Developments in Economic Theory.
2.	Prof. C. T. Kurien	Professor & Head of the Dept. of Economics, Madras Christian College Tambaram.	Identifying Economic Research Themes.
3.	Dr. K. Krishnamoorthy	Senior Fellow. Institute of Economic Growth, Delhi-7.	Formulating and Testing of Hypothesis.
4.	Dr. Kamta Prasad	Head of the Dept. of Humanities and Social Science, Indian Institute of Technology, Kanpur.	Formulating and Testing of Hypothesis.
5.	Dr. Taresh Maitra	Indian Statistical Institute, Calcutta.	Use of Statistics.
6.	Prof. K. S. Sonachalam	Sivagiri House, Courtallam, Tenkasi.	Use of Case Studies.
7.	Prof. S. K. Ekambaram	Statistical Consultant, Siate Planning Commission, Madras-5.	Use of National Sample Survey.
8.	Prof. A. Neelameghan	Documentation Research and Training Centre. Bangalore.	Use of Documentation.
9.	Prof. N. Srinivasaraghavan	Department of Economics, Madurai University.	Forecasting and Model Building.
10.	Prof. T.V.S. Ramamohan Rao	Department of Humanities & Social Sciences, Indian Institute of Technology, Kanpur.	Some observations on the Methodology of Econometric Model Building.
11.	Prof. E. Max	Economics Department, Madurai University.	Forecasting and Model Building.
12.	Prof. A. Ramaswami	Professor & Head of the Dept. of Economics, Annamalai University, Chidambaram.	Structure of a Ph. D. Thesis.
13.	Prof. G. Parthasarathy	Professor & Head of the Dept. of Co-operation & Applied Economics, Andhra University College, Waltair.	Agricultural Economics.
14.	Prof. S. C. Joseph	Professor of Economics, Madras University, P. G. Centre, Tiruchirapalli-1.	Development Economics.
15.	Prof. B. Sarveswara Rao	Professor & Head of the Dept. of Economics, Andhra University, Waltair.	Notes on Benefit-Cost Analysis of Projects.
16.	Prof. P. R. Brahmananda	Professor of Economics, University of Bombay, Bombay.	Monetary Economics.
17.	Prof. Pravin Visaria	Department of Economics, University of Bombay, Bombay.	The Use of Census Data.

CORRESPONDENCE

Letter from MR. B. M. THIRUNARANAN, *Madras.*

Regarding Development of Irrigation and Rural water Supply

Sir,

You have done a great public service by highlighting the importance of Rural Water Supply in our country and the neglect which it has suffered.

I. From the unpublished data pertaining to Tamil Nadu which you have now made available, the most urgent need is seen to be the total lack of water in 4916 villages and the very inadequate supply available to 2230 villages. Another 2681 villages are in a "permanently disadvantaged" position. The total number of villages in Tamil Nadu where the problem of drinking water supply is very urgent is thus reduced to 9827 villages.

May I suggest that these may be taken as the starting point, and it may be verified in the first instance, whether there are any wells at all in each of these villages. It will be possible to take over and utilise for supplying drinking water any well that may already exist, provided it is yielding water. From my experience when I attempted to obtain such information, I feel that this verification is necessary, because we have to face the question, "From where are they now getting their supplies of drinking water?" The verification will definitely indicate for some of these villages, sources of water supply which could be taken over and improved.

After the verification is completed for these ten thousand villages the problem will divide itself into (a) the acquisition and improvement of sources of supply already in existence, and (b) the provision of new sources of supply to those villages which have no water at all. The acquisition of a straightforward administrative procedure where there is no uncertainty like that which has to be faced in sinking a new well.

In devising schemes for supplying drinking water from new sources to the villages which need it, it is advisable to prepare maps showing the exact location of each of these villages. These maps will be of great value, (a) in bringing out clearly the areas in which these villages are located, and (b) in showing the possible localities or sources of supply to be tapped. Generally, water deficiency is related to the topography and structure, and the deficit villages will occur in groups. On the basis of these maps, it will be possible,—in fact desirable—to plan for supplying water for the entire group instead of attempting to provide a separate source of supply for each village and hamlet comprising the group. Carefully prepared maps showing clearly the several deficit areas and their relation to the topography of the region in which they lie, will provide a sound and scientific basis for devising solutions for the water supply problems of the deficit areas. By carrying out the verification and the mapping on the lines suggested I am quite sure the problem of lack of rural drinking water supply in Tamil Nadu can be reduced to a few hundred "localities" from 10,000 villages.

II. In this context it has to be noted that ground water conditions show serious deterioration in several parts of Tamil Nadu. Information relating to this seems to have been collected for the whole State and supplied to the Union Government. Some of the details were published in a note in the Indian Express of 6th May, 1972. It is suggested in that note that (a) wastage of ground water should be avoided, and (b) conservation through proper methods should be adopted. Restrictions on the indiscriminate sinking and deepening of wells have also been suggested.

The very fact that this aspect has not been considered in the June Seminar shows that the seriousness of the problem has not been fully realised. It I may say so, the deterioration in the ground water conditions noted in several districts, particularly in the drier interior of Tamil Nadu denotes an advanced stage of environmental misuse, which demands urgent consideration and speedy action. We have to look at this worsening in relation to the high rate of growth of the population. The increasing population implys that the total consumption of water even at the present inadequate level will go on increasing year after year. The only way of dealing with the situation is to adopt quickly measures that will help to arrest and reverse the deteriorating trend.

Some of the remedial measures become evident if we consider for a moment from where the ground water which we desire to exploit comes. This is indicated on page 20 of the same issue of your Bulletin, where it is stated, "of the 3,000 million acre feet from the country's annual rainfall 650 million acre feet seep into the soil, of which 300 million acre feet percolates to the subsoil and becomes ground water." Why does not the whole of the 650 million acre feet which reaches the ground surface soak into the soil? Is it not possible to increase the percolation to more than 300 million acre feet? Actually the amount of water which percolates into the soil is being reduced steadily by what is being done at the surface. In all urban areas, wherever roads and buildings are made, the ground area thus occupied becomes incapable of absorbing rain when it falls ; the rain water has to flow along the ditches and drains into the nearby river or tank or sea, instead of soaking into the ground. In areas brought under cultivation or cleared of the natural plant cover, rainfall similarly tends to be lost as surface runoff to a greater extent than when the soil is covered by plants and trees. The increased runoff usually carries away some of the fine surface soil, too, and by degrees the capacity of the soil to absorb water gets reduced correspondingly. In and near areas suffering from denudation of the natural plant cover and soil erosion, a decrease of ground water supplies usually follows.

It is now a well - established fact that measures taken to conserve the soil not only prevent soil erosion but also bring about an improvement in the ground water supply of the areas. The experience of the Agricultural Department of Tamil Nadu also serves to confirm this. Afforestation of areas similarly helps to bring about soil conservation as well as an improvement in ground water. In all the measures adopted in soil conservation and afforestation schemes the primary aim is to check surface runoff and increase percolation. The improvement in the ground water supply which follows is therefore readily understandable. The extension of soil conservation and afforestation over a larger area will in turn benefit ground water conditions over a correspondingly larger area. A considerable improvement which will tend to become more effective each year, can be secured by adopting even relatively inexpensive measures like enclosing upland areas serving as

catchments, in order to prevent overgrazing and indiscriminate cutting and destructing of the natural plant cover in the enclosed areas. Within three to five years a good growth of scrub and grass usually develops and helps to hold the fine surface soil intact, and at the same time increase the capacity of the soil to absorb moisture. With each passing year, the plant growth will become denser and taller, and the area will become increasingly capable of absorbing and retaining the rainfall. With a systematic planting of suitable trees, these areas can be completely transformed into tree-clad tracts in ten to twelve years. We have an outstanding example of this type of environmental improvement very close to Madras, in the campus of the Madras Christian College at Tambaram. When it was first acquired, the only trees in the entire area were a few palmyrahs. Before the college was shifted there, the major problem for the college authorities was to find enough water for their use. For many years they had to manage with a strictly limited supply of water to the hostels and Staff quarters etc., in order to manage with the supply available. Now they have a much larger residential population in the hostels and the staff quarters, but they are able to meet the needs of the larger number with no more difficulty than at the outset, as a consequence of the better yields given by the several wells sunk in the campus.

A scientifically planned programme of (a) enclosing (b) afforestation, and (c) execution of appropriate soil conservation measures, concentrated in the largely un-occupied and nearly barren upland tracts in all the districts will go far to improve the ground water situation in the interior parts of Tamil Nadu. A ground water improvement programme must be prepared quickly for the whole State, designed as an integrated scheme. It will be of great value to collect detailed information from every block, taluk and district in Tamil Nadu about the extent of deterioration of ground water conditions and prepare maps to show the varying degrees to which it has developed. These maps will provide a rational basis for deciding on the areas needing urgent attention.

The scheme will include measures to increase the percolation and recharge of the aquifers, as well as measures to conserve the existing supply by developing frugal mothods of using water. The latter will have to be based on more economic ways of using water in irrigation and industry, and the recycling of water wherever possible. A comprehensive programme of publicity and education at all levels is also urgently needed to secure the economic use of water, and to eliminate pollution as well as waste.

BOOK REVIEW

Economics of Dry Farming in Tamil Nadu

By

K. SAMPATH and JAYALAKSHMI GANESAN,

(Research Assistants MIDS), Sangam Publishers, Madras-1. Price Rs. 12/-

Apart from being a challenge to agricultural scientists, dry farming in India becomes an emerging concern of economists and other social scientists. Already the green revolution of the sixties has generated diverse process income dispersal and concentration resulting in inequitable distribution of production assets and motivation. Many of these disquieting trends are discernible also in regional imbalances and, consequently, regional tension portent with social and political upheavals.

Planning in the seventies for development of agriculture in India, and more significantly in Tamil Nadu, has to recognise the need for developing dry farming so that about two thirds of farming population could also enjoy the fruits of technological revolution in farming. To this end research efforts and action programmes have to be formulated and set the dry farming on a sound scientific basis. As in the case of many farm problems, information, specific and dependable, on dry farming is hardly available. The publication, 'ECONOMICS OF DRY FARMING IN TAMIL NADU' is filling the information gap somewhat and the Madras Institute of Development Studies should be congratulated for bringing out this timely publication which deserves careful study by all concerned.

The book uses secondary data published by the Director of Statistics in the Season and Crop Reports supplemented by survey data from the same source and experimental information provided by the Department of Agriculture. The significant contribution lies in collection, collation and analysis of the data and presenting a well organised discussion.

In an excellent preface the Director has brought together the variegated problems of dry farming in Tamil Nadu making note of alternative policy criteria relating to institutional and administrative changes needed for improving dry farming practices in Tamil Nadu. Since, by assumption, adequate technology is available, the main emphasis is on economic and organisational aspects of the problem which deserve close examination by the planners. In chapter-I, a brief description of assumptions made in the study is given along with identification of specific problems of the rainfed areas. In chapter-II a descriptive

analysis of dry farming in Tamil Nadu during the past two decades is attempted. The section which deals with definition and district wise delimitation of dryland farming areas in Tamil Nadu gives an interesting methodological point. The seven districts are identified as dryland areas on the basis of annual rainfall (400-1200 mm) and percentage distribution of drylands among the districts. The percentage distribution in the seven districts varies from 7.72 to 14.48 in 1967-68 (Table 5) and the annual rainfall varies from 718.4 mm to 877.1 mm (page 7). Viewed from another angle, the seven districts have less than 40 per cent of the cropped area under irrigation.

A review of the progress of area production and productivity of five major dryland crops viz., cholam, cumbu, ragi, cotton and groundnut is presented. The variations in the above three magnitudes are studied and plausible reasons are identified and discussed. The profitability and relative price structure with reference to these five crops are taken to be the major criteria for analysing the variations. However, the seasonal distribution of annual rainfall would also influence the choice of crops and ultimate crop mix. In addition data on current fallows could serve as indicators of crop sowings for that period. As regards the trend analysis presented, it is seen total area of reference crops both irrigated and unirrigated, has been taken for studying the trend. This could have been limited to unirrigated area so that meaningful conclusions could be drawn. Further, cotton acreage and production seem to exhibit non-linear trends ; and in such cases, discussions and inferences would be likely to be different.

Chapter III presents vividly the comparative economics of traditional and modern methods of cultivation of the reference crops. An additional observation has been made about built-in uncertainty over acreage and productivity. The evaluation of additional costs and returns is revealing. The discussions are suggestive for development of policy issues in the following chapter.

In chapter IV the case of dry farmers, who are mostly the small farmers and the need for institutional financing has been very well discussed. The suggestions to make the cooperatives more useful to the hitherto neglected small farmers should solve the problem of financing the dryland agricultural development programme. In the crop loan system suggested for dry land some safeguards against the failure of crops may be made for waiving the interest and building up certain special reserves to meet such contingencies.

On the marketing side, programmes for development of market committees and cooperative marketing societies on the lines suggested are already there. At least concerted efforts in the three districts as suggested in the report should infuse confidence in the minds of farmers to avail of the services of these institutions for profitable marketing. It has been cited as example on page 121 that paddy in North Arcot and groundunt in Tirunelveli are not notified crops whereas these two crops have been notified in these areas.

Finally I suggest the following errata may be included wherever found absolutely necessary :-

Page No. and line 1	*Existing version* 2	*To read* 3
12 line 18	Cholam	Ragi
15 line 2	43.37	43.37%
16 line 23	(refer table-1 Appendix-2)	Either delete this version or include the table as it is not seen in the report.
17 line 13	soil fertilizers	Soil fertility
19 line 10	Complementary	Complementarity
41 line 3	Yield	Yield (Kg/ha) (The table does not contain percentage as the title indicates)
42, 44 line 2	'000 hectares '000 tonnes	'000 hectares '000 tonnes Kg. per hectare.
46 line 2	In the title	(Include) Tamil Nadu
65 line 4	incurred no.	incurred on
77 line 15	Duration of season	Duration and season
78 line 24	Emergency of	Emergence of.
78 line 30	1 Kil	1 Kg.
82 line 5	K-7	K-7,
82 line 15	P_20_5	P_20_5,
83 Table Col. 6 row. 1	MCV.6	MCU.6
84 line 21	Amsaeta spp.	Amsacta spp.
85 last line	of Agriculture	Agriculture.
100 Table. 10 line 8	Per borrowing member (Rs. in lakhs)	Per borrowing member (in rupees)
100 Table. 10 line. 24	Primary and land development bank	Primary land development banks.
121 line 29	eg. paddy in North Arcot, Groundnut in Tirunelveli.	(Delete)

Dr. V. Rajagopalan.

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MADRAS INSTITUTE
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- Publication of papers and research results of the institute.

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